

The University of Chicago

THE SEQUENT OCCUPANCE OF
THE RANCHO AZUSA DE DUARTE
A SEGMENT OF THE UPPER SAN
GABRIEL VALLEY OF CALIFORNIA

A DISSERTATION SUBMITTED TO THE FACULTY OF
THE DIVISION OF THE PHYSICAL SCIENCES IN
CANDIDACY FOR THE DEGREE OF DOCTOR OF
PHILOSOPHY

DEPARTMENT OF GEOGRAPHY

JUNE, 1948

By

IDA MAY SHRODE

CHICAGO, ILLINOIS

1948

The University of Chicago

THE SEQUENT OCCUPANCE OF
THE RANCHO AZUSA DE DUARTE
A SEGMENT OF THE UPPER SAN
GABRIEL VALLEY OF CALIFORNIA

A DISSERTATION SUBMITTED TO THE FACULTY OF
THE DIVISION OF THE PHYSICAL SCIENCES, IN
CANDIDACY FOR THE DEGREE OF DOCTOR OF
PHILOSOPHY

DEPARTMENT OF GEOGRAPHY

JUNE, 1948

By

IDA MAY SHRODE

CHICAGO, ILLINOIS

1948

2179/49

Copyright 1948 by Ida May Shrode



ACKNOWLEDGMENTS

Many people have aided me in many ways toward the completion of this dissertation. My sister, Mrs. Bertha Shrode Parks, has helped with numerous favors. Miss Evelyn Enches and Miss Minnie Yonge did the driving which made the field maps possible and helped in many other ways. Miss Jean Berry and Mrs. Lucille Wyant helped with the drafting of maps. Mrs. Ana Begue de Packman, secretary of the Historical Society of Southern California, helped by making available the Society's files of early Los Angeles newspapers, as well as by her personal enthusiasm. Many librarians--some whose names I do not know--have assisted by patiently and cheerfully searching out obscure materials. The memory of members of my family who lived on the Duarte rancho between 1874 and 1948 has been an abiding inspiration. Friends among Duarte pioneers have assisted by recalling features of the rancho's earlier occupancy patterns. I owe much to my uncle and aunt, the late Mr. and Mrs. E. B. Norman, whose remarkable memories helped fill in and explain land patterns of the past. The Delta Kappa Gamma Society has assisted materially through the award of its Annie Webb Blanton national research scholarship. Professor Charles C. Colby, chairman of the Department of Geography of the University of Chicago, under whose direction this dissertation has been written, has helped with constructive suggestions concerning the organization of material. Professor Henry M. Leppard has assisted through suggestions concerning the use of illustrative materials. To all of these and to the many persons not mentioned who have helped toward the completion of this dissertation, I express grateful appreciation. All are absolved of responsibility for any of my statements or conclusions, however, since for them I assume sole responsibility.

Duarte, California
May, 1948

Ida May Shrode

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	iii
LIST OF TABLES.	vi
LIST OF ILLUSTRATIONS	vii
 Chapter	
I. THE AREA AND THE PROBLEM.	1
Nature and Scope of the Problem	1
Setting of the Problem.	2
Historic Ranchos of the Los Angeles Lowland . .	4
The Occupance Pattern of the Rancho Azusa de Duarte.	10
Background for Occupance of the Rancho Azusa de Duarte	14
Problems Raised Concerning Sequent Occupance. .	22
II. OCCUPANCE OF THE SAN GABRIEL VALLEY BEFORE 1848, THE BEGINNING OF THE AMERICAN PERIOD.	23
Occupance and Economy of the Indian Period. . .	23
The Spanish Period.	26
The Mexican Period.	34
III. THE RANCHO AZUSA DE DUARTE IN THE EARLY AMERICAN PERIOD OF CALIFORNIA HISTORY (1848-1872).	46
Land Titles and Occupance	46
The Los Angeles Lowland at the Dawn of the Early American Period	51
Extraneous Influences on Occupance.	52
Break-up of the Rancho Azusa de Duarte.	56
Remoteness and Isolation of the Early American Period.	60
Evidences of a Changing Economy	65
IV. OCCUPANCE OF THE DUARTE RANCHO IN THE PERIOD OF FIELD CROPS AND HORTICULTURAL EXPERIMENTS (1872- 1900)	69
Duarte Occupance in the Seventies	69
The Occupance Setting	80
Railways and Declining Isolation.	81
Rising Horticultural Occupance.	84
The Boom of the Eighties and Land Use	87
A Post-Boom Appraisal of the Piedmont Section of the Los Angeles Lowland.	94
The Depressed Nineties.	95

Chapter	Page
Water and Occupance in the Years of Field Crops and Horticultural Experiments	96
Citricultural Occupance of the Nineties	99
Occupance of the Rancho Azusa de Duarte in 1897.	104
V. OCCUPANCE OF THE DUARTE RANCHO IN THE PERIOD OF CITRICULTURAL DOMINANCE (1901-1947)	107
Occupance in the Years of Horticultural Adjust- ments (1901-1914)	107
Occupance in the Years of Approaching Citricul- tural Maturity (1915-1929)	119
The Impending End of Citricultural Dominance (1930-1947)	124
VI. FINDINGS AND CONCLUSIONS.	145
Summary of Findings	145
Conclusions	146
APPENDIX--NOTES ON ILLUSTRATIONS.	155
BIBLIOGRAPHY.	158

LIST OF TABLES

Table	Page
1. Population of California, Los Angeles County, the Unincorporated Part of the Rancho Azusa de Duarte, and Neighboring Cities	9
2. Composition of Population of the Unincorporated Section of the Duarte Rancho in 1940	15
3. Wind Direction, Temperature, and Rainfall, Azusa, California	18
4. Cattle Driven into California in 1854.	53
5. Settlements in Los Angeles County in 1860.	61
6. Manufacturing Establishments of Los Angeles County, 1860	63
7. Irrigated Crops of Duarte in 1888.	84
8. Seven-Year Record of Carloads of Oranges Shipped from Duarte.	110
9. Average Cost of Producing One Packed Box of Oranges in Los Angeles County, 1931-1937, Exclusive of Interest and Depreciation.	129
10. United States Citrus Shipments in Standard Cars by Years, 1936 through 1946	132
11. July Traffic Flow over Highway 66 through Duarte and Azusa for Thirteen Consecutive Years	142

LIST OF ILLUSTRATIONS

Plate	Page
I. The Los Angeles Lowland and Adjacent Highlands	Frontispiece
II. Occupance of the Ranchos Santa Anita, Azusa de Duarte, and Azusa de Dalton.	Pocket
III. Occupance of the Rancho Azusa de Duarte	Pocket
IV. Sequent Occupance of Highway Frontage through the Rancho Azusa de Duarte.	Pocket
 Figure	
1. Los Angeles Metropolitan District	3
2. The Rancho Santa Anita, North Part of the Rancho San Francisquito, and West Part of the Rancho Azusa de Duarte.	5
3. The Rancho Azusa de Duarte and Its Surroundings	7
4. The Rancho Azusa de Duarte--Boundaries, Topography, and Culture	Facing 8
5. Rainfall and Temperatures, Azusa, California.	16
6. Soils of the Duarte Rancho.	19
7. Surface and Ground Waters of Rancho Azusa de Duarte	21
8. Territory and Villages of the Gabrielino Indians	25
9. Mission Pastures and Principal Ranchos.	29
10. The First Map of the Rancho Azusa de Duarte	38
11. The Duarte Ranch House.	45
12. Plat of the Azusa Rancho Confirmed to Duarte, 1858.	Facing 48
13. The Rancho Azusa de Duarte in 1860.	Facing 58
14. Map of the Subdivision of the Rancho Azusa de Duarte, 1872.	Facing 70

LIST OF ILLUSTRATIONS--Continued

Figure	Page
15. Occupance of the Rancho Azusa de Duarte, 1897.	Facing 104
16. The Rancho Azusa de Duarte, 1929.	Facing 120
17. Total United States Citrus Production by Major Varieties, 1926-1927 to 1945-1946 . .	130
18. Zoning Plans for the Rancho Azusa de Duarte.	137

CHAPTER I

THE AREA AND THE PROBLEM

Nature and Scope of the Problem

The problem presented in this dissertation lies in the field of historical geography. Fundamental detailed investigation is limited to the Rancho Azusa de Duarte, a small section of the San Gabriel Valley of California, but broader aspects of the study fit this segment into its regional and inter-regional setting. The progressively intensive occupance of the Duarte rancho demonstrates the types of landscape changes which have taken place in the semiarid Los Angeles region as a once remote pueblo has become a great city. As this inherently isolated area has grown into a vast conurbation, the historic ranchos which once surrounded the pueblo of Los Angeles have undergone constant occupance changes. Their landscapes have reflected the ramifying influences of decreasing isolation as they have been brought into the fringe of an expanding metropolis and ultimately into that metropolis itself.

The immediate problem of this dissertation is to discover, depict, and analyze the sequent occupance of the Rancho Azusa de Duarte, an historic land unit centrally situated in both the upper San Gabriel Valley and the San Gabriel Piedmont. To demonstrate that this is a representative land unit in which are epitomized occupance features characteristic of the upper San Gabriel Valley, a map is presented which reveals the current occupance of three of its historic ranchos. These contiguous ranchos are the Santa Anita on the west, the Azusa de Duarte in the center, and the Azusa de Dalton on the east. This map demonstrates in what ways and to what extent the present functional areas of Duarte are similar to those in adjoining ranchos. Thereafter the occupance pattern of the Rancho Azusa de Duarte is presented in detail and the background for that pattern is described. Succeeding steps in the study include the reconstruction, cartographic presentation, and analysis of the Duarte landscape as it has appeared in successive historical periods. In Chapter II the sequent occupance of the

upper San Gabriel Valley before the Mexican War is described and interpreted. Duarte's pastoral occupance of the early American period (1848-1872) and the factors which conditioned and terminated it are presented in Chapter III. The changing landscape of the period of field crops and horticultural experiments (1872-1900) is described and analyzed in Chapter IV. Occupance of the period of citricultural dominance (1900-1947) is considered in Chapter V. Findings and conclusions are presented in Chapter VI.

Setting of the Problem

The Los Angeles Lowland and the Duarte Rancho

The Rancho Azusa de Duarte is a tiny part of the Los Angeles Lowland,¹ the physiographic region which stretches from the San Gabriel and San Bernardino Mountains on the north to the San Jacinto and Santa Ana Mountains on the south and to the Pacific Ocean on the west.² Although its area approximates but 2,000 square miles, this lowland is the largest continuous plain along the entire east margin of the Pacific. Over half of it is in Los Angeles County and the remainder in San Bernardino, Riverside, and Orange Counties. This region comprises less than 1.5 per cent of California's area, yet it contains half of the state's people. Within it are sixty incorporated cities, many unincorporated suburban communities, agricultural areas, and sections like the Duarte rancho in which urban and rural occupance meet.

There are three distinct physiographic subdivisions of the Los Angeles Lowland. The northwestward prong between the Santa Monica and San Gabriel Mountains is the San Fernando Valley. Hills separate the remainder into the Coastal Plain and the San Gabriel-San Bernardino Piedmont. The piedmont consists of two principal valleys, that of the San Gabriel River on the west and, to the east, the larger San Bernardino Valley drained by the Santa Ana River. This dissertation is concerned chiefly with the upper portion of the San Gabriel Valley which is centrally situated in the San Gabriel Piedmont (Plate I). This valley is a little over

¹The Los Angeles Lowland is known also as the Los Angeles Plain, the Los Angeles Basin, and the Valley of Southern California.

²Nevin M. Fenneman, Physiography of Western United States (New York, 1931), p. 500.



SOURCE, SIXTEENTH CENSUS, POPULATION, VOL. I.

FIGURE 1

twenty miles wide in an east-west direction and contains approximately 278 square miles. It is broadest in the west and narrowest in the east, but throughout most of its length is from seven to ten miles wide. The Rancho Azusa de Duarte lies along the foot of the San Gabriel Mountains, stretching westward from the east side of the San Gabriel River. This rancho is thus in the heart of the upper San Gabriel Valley.

Metropolitan Los Angeles and the Duarte Rancho

The Rancho Azusa de Duarte which was created as a land unit in a pastoral economy is now within the Los Angeles metropolitan district,¹ the largest urban agglomeration on the Pacific coast of the Americas. Figure 1 depicts the extent of this conurbation and shows the position of the historic Duarte rancho within it. The center of this rancho is fifteen miles by direct line northeast of the Civic Center, the mileage datum point of Los Angeles. The proximity of this burgeoning city has been a potent stimulus to the rancho's occupancy changes.

Historic Ranchos of the Los Angeles Lowland

During the Spanish and Mexican periods of California's history when land was abundant and population slight, most of the Los Angeles Lowland was granted to citizens to use for raising cattle. The open range prevailed and little attention was paid to boundaries until after the American conquest when surveys established their definite limits. The patchwork shape of the grants, the irregularly shaped units into which they were divided, and the persistence of roads and fences along some of their borders have resulted in many landscape features in striking contrast with the rectangular pattern of areas subdivided on the basis of public land surveys.

Three Ranchos of the Upper San Gabriel Valley

The Mexican government in 1841 granted three contiguous ranchos to petitioners for San Gabriel Valley land which had formerly been under the jurisdiction of the San Gabriel Mission.

¹U. S. Bureau of the Census, Sixteenth Census of the United States: 1940. Population, Vol. I (Washington: Government Printing Office, 1943), p. 147.



Figure 2.--The Rancho Santa Anita, north part of the Rancho San Francisquito, and west part of the Rancho Azusa de Duarte. (Spence Air Photo, January, 1941.)

Rancho Santa Anita on the west with 13,310 acres is the largest of these grants and has the highest percentage of arable land. In the center lies the Rancho Azusa de Duarte of 6596.62 acres, and on the east is the relatively small Rancho Azusa de Dalton of 4,431 acres.¹ To the north the giant blue backdrop of the San Gabriel Mountains separates the populous Los Angeles Lowland with its Mediterranean climate from the sparsely peopled Mojave Desert. Slope is greater toward the north, but in all three ranchos gradients contrast with those of the abrupt chaparral-clothed mountains in the background. The lowest point in the ranchos is in the southeast corner of the Santa Anita where elevation is only 345 feet above the sea.² The highest point is five and one-half miles away along the mountain border of the same rancho where the elevation is 1,275 feet.³

Plate II presents the gross occupancy pattern of the Rancho Santa Anita and the two Azusa ranchos as of March, 1947. It reveals that the Rancho Azusa de Duarte shares most occupancy characteristics which distinguish its neighbors. Urbanization tends to decrease from west to east, the Santa Anita which is nearest the commercial core of Los Angeles being most nearly covered with satellites of that city. Within the Santa Anita lie the easternmost part of Pasadena, the southern three-fourths of Sierra Madre, the northern section of San Marino, all of Arcadia, and the west two-thirds of Monrovia. Except for its northwest prong which extends into the unincorporated residential city of Altadena and a narrow strip of land between Pasadena and Sierra Madre, the Rancho Santa Anita is completely covered with incorporated cities. The city of Monrovia has absorbed into its corporate limits one-fifth of the Rancho Azusa de Duarte. The remaining four-fifths of the Duarte rancho constitutes the largest block of unincorporated land in the three ranchos.

As Plate II demonstrates, residential occupancy is areally the dominant form of land use in the portion of the upper San

¹In the Spanish and Mexican periods of California history the name "Azusa" was applied to the mountains, the river, and the valley to which the name "San Gabriel" has subsequently been given. The name "Azusa" is derived from that of the Indian village of Asuksa.

²United States Geological Survey, Sierra Madre Quadrangle, edition of 1941.

³Ibid.

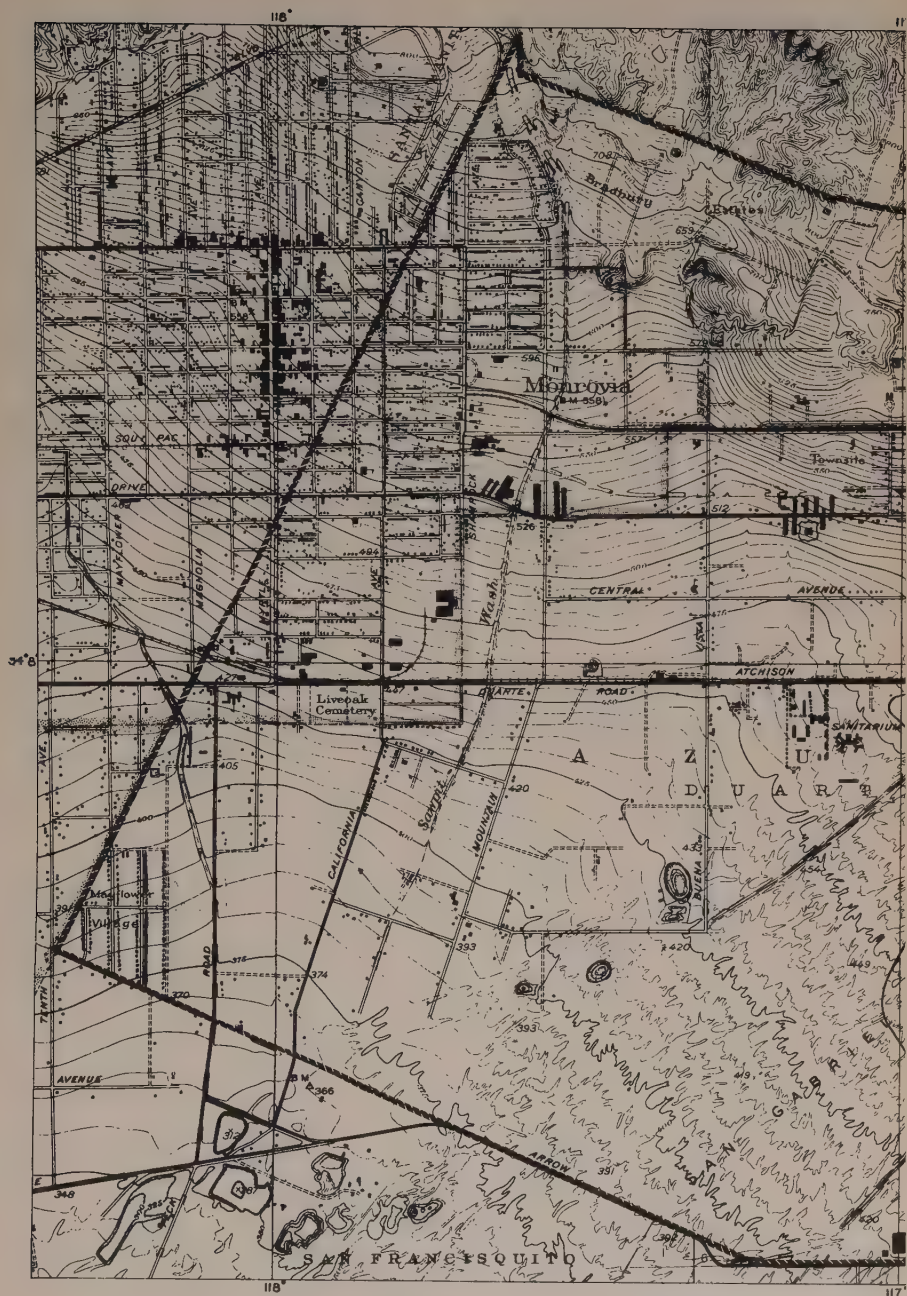


Figure 3.--The Rancho Azusa de Duarte and Its Surroundings (Spence Air Photo, January, 1941)

Gabriel Valley investigated for this study. Residential occupancy is most continuous in the Rancho Santa Anita, giving way to horticulture in large portions of the two Azusa ranchos. Occupancy is interrupted on both of these ranchos by the intermittent San Gabriel River which widens southward into a maze of boulder-strewn arroyos enclosed within the Santa Fe Dam. Contrasts in pedology and culture are sharp between the arable sections of the Azusa ranchos and this wide wash on whose margins are rock crushers and great gravel pits. The largest continuous area devoted exclusively to manufacturing is in nonagricultural rocky terrain on the east side of the San Gabriel River in the Rancho Azusa de Dalton. In all three ranchos the arable land not devoted to residential, commercial, or manufactural use is utilized chiefly for citriculture. Viticulture, formerly of great areal significance, is now confined to the northwest of the Rancho Santa Anita where a relict vineyard is shrinking as residential subdivisions impinge upon it. In all of these ranchos urban occupancy is encroaching so persistently upon vacant and agricultural land that boundaries between functional areas are unstable. As elsewhere throughout the Los Angeles Lowland, population is increasing rapidly (Table 1). Because historic ranchos do not correspond with cities or with minor civil divisions, and because there has been an influx of people since the last official census, the total population of the Ranchos Santa Anita, Azusa de Duarte, and Azusa de Dalton defies accurate computation. Evidences indicate, however, that it approximates 75,000.

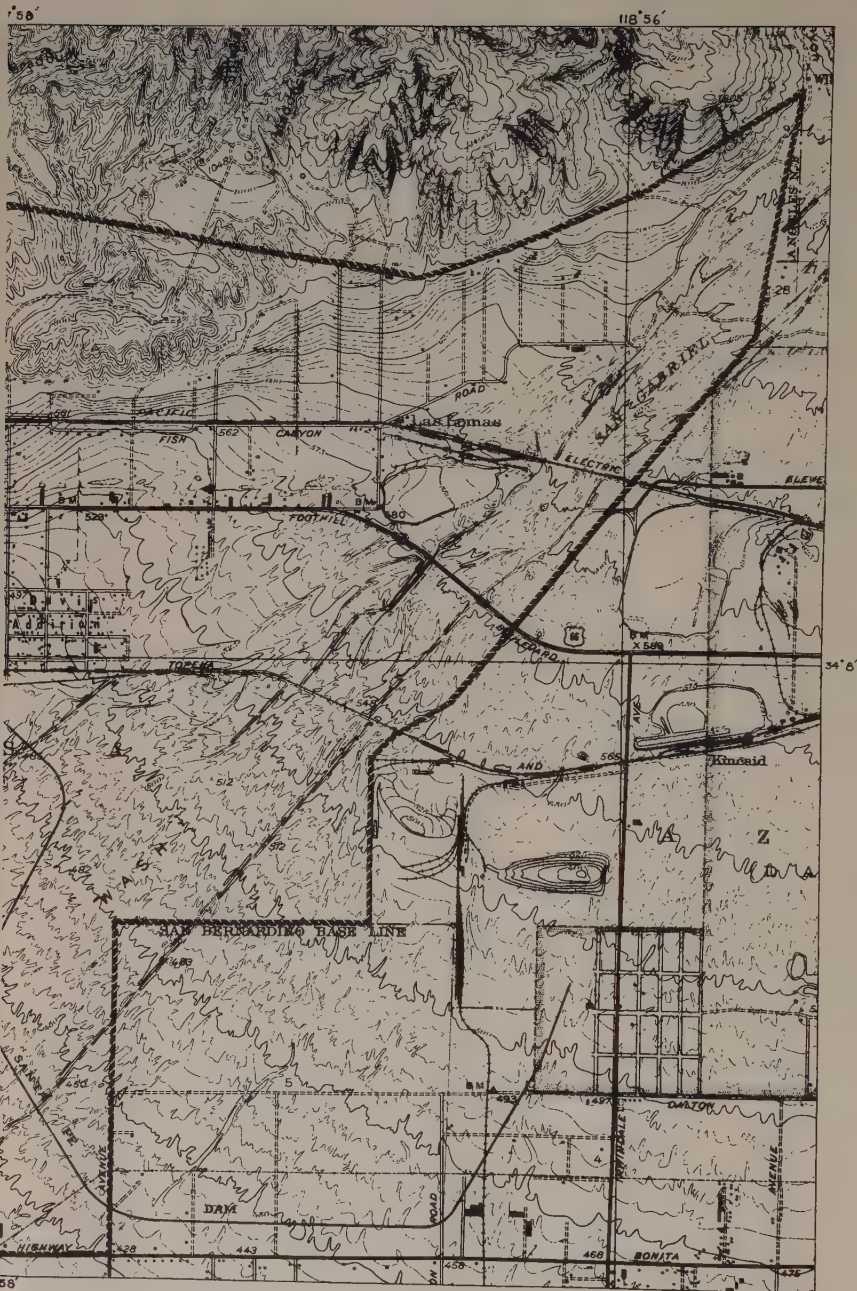
Azusa de Duarte, a Representative Rancho

Plate II demonstrates the similarity between the functional areas of the Rancho Azusa de Duarte and its neighbors. Although its area is but half that of the Rancho Santa Anita, its landscape displays all types of functional areas represented in Santa Anita except a race track. Duarte's residential districts are smaller and less continuous than those of more urban Santa Anita, but its citrus areas are more extensive. All types of functional areas present in Azusa de Dalton are present also in Azusa de Duarte, though they differ in extent. The Duarte rancho has fewer commercial nodes than the Santa Anita, but like it and the Azusa de Dalton, has an elongated commercial belt along United States Highway 66. In extra-regional connections, as in functional areas,



BOUNDARY

RANCHO AZUSA
BOUNDARIES, TOPOGRAPHY
FIGURE



DE DUARTE

HY. AND CULTURE

6

SCALE 0 1 2
0 4 2



TABLE 1

POPULATION OF CALIFORNIA, LOS ANGELES COUNTY, THE UNINCORPORATED
PART OF THE RANCHO AZUSA DE DUARTE, AND NEIGHBORING CITIES^a

Census Year	California	Los Angeles County	Los Angeles City	Los Angeles Metropolitan District	Rancho Azusa de Duarte	City of Monrovia	City of Arcadia	City of Azusa
1850.....	92,597	3,530	1,610	.....	.....	.....	.....	.....
1860.....	379,994	11,333	4,385	.....	.....	.....	.....	.....
1870.....	560,247	15,309	5,728	.....	.....	.....	.....	.....
1880.....	864,694	33,381	11,183	.....	.....	.....	.....	.....
1890.....	1,213,398	101,454	50,395	.....	.....	907	.....	.....
1900.....	1,485,053	170,298	102,479	123,062	.....	1,205	.....	863
1910.....	2,377,549	504,131	319,198	438,226	.....	3,576	696	1,477
1920.....	3,426,861	936,455	576,673	879,008	.....	5,480	2,239	2,460
1930.....	5,677,251	2,208,492	1,238,048	2,318,526	1,485	10,890	5,216	4,808
1940.....	6,907,378	2,785,643	1,504,277	2,904,596	2,197	12,807	9,122	5,209
1947.....	9,350,000 ^b	3,798,356 ^c	1,905,824 ^c	3,900,000 ^b	3,500 ^b	17,177 ^c	16,796 ^c	8,407 ^c

^aSources: U. S. Census reports except as noted below.

^bPrevailing estimates.

^cEstimate of the Los Angeles County Regional Planning Commission for July 1, 1947.

the Rancho Azusa de Duarte is representative of the upper San Gabriel Valley. The Santa Fe, the principal railway which crosses the Duarte rancho, is also the principal one which crosses the Ranchos Santa Anita and Azusa de Dalton. Highway 66 is the most traveled road through all three ranchos. A detailed study of the sequent occupance of the representative Rancho Azusa de Duarte should thus throw light on the sequent occupance of adjoining ranchos.

The Occupance Pattern of the Rancho Azusa de Duarte

The pattern and extent of the functional areas of the Rancho Azusa de Duarte are depicted by Plate III. From this map it is apparent that urban and rural types of land use meet on the Duarte rancho.

Transportational Occupance

The more heavily traveled east-west roads parallel the mountain barrier to the north and are oriented with respect to the rancho's intermediate position between Los Angeles to the west and the passes to the east which connect the Los Angeles Lowland with the Great Basin and regions farther eastward (Plate I). Highway 66 is a six-lane thoroughfare except on the river bridge where it narrows to four lanes. Most county roads are built on forty-foot strips, all of which is used for pavement and gutters. In the Monrovia section of the rancho the most-traveled roads are sixty feet wide with their bordering sidewalks, but Myrtle Avenue, the principal commercial street, is eighty feet wide. Except in Monrovia, there are no sidewalks, even in distinctly residential sections. The Glendora-Monrovia line of the Pacific Electric Railway crosses the rancho, providing transportation to and from Los Angeles. The main line of the Atchison, Topeka, and Santa Fe lies along the north side of Duarte Road. Its Monrovia station is in the west part of the rancho. Between the Pacific Electric and the Santa Fe a branch of the Southern Pacific Railway extends as far east as the plant of the Day and Night Manufacturing Company. The Monrovia airport occupies an elongated site south of Highway 66 just outside the Monrovia city limits. Although no commercial passenger or mail planes use this airport, it is of service as an emergency landing field for private planes and as a center for training aviators.

Crop Land

Tree crops dominate the cultivated land of the Duarte rancho and citrus trees dominate its orchard pattern. There is little unused land except in the gravelly flood channels and in the rough and broken uplands. Orange groves in nearly unbroken succession characterize the arable and least urbanized section of the rancho, with a few small lemon groves forming minor variations in the pattern of citriculture. Clumps of taller trees above the orchard levels denote the position of compact farmsteads. Orchards--three-fourths of which are in good condition--are composed chiefly of mature or old trees. Avocado trees are widely scattered, but commercial avocado orchards are confined to the foothills. Small relict orchards of English walnut trees are notable in the southwest where residential occupancy is invading their shade. Here and there in the southwest are small persimmon orchards, and in the foothills are two unirrigated olive orchards. Nurseries and commercial floriculturists carry on intensive horticulture in five sections of the rancho. Winter grain is grown for hay on the foothill mesas where soil is too shallow for tree crops. Streets for a residential subdivision are now invading these fields. Patches of irrigated field crops, chiefly alfalfa, remain in the southwest, but they too are shrinking as residential occupancy spreads.

Besticulture

Five dairies are included in the occupancy complex of the Duarte rancho--two on arable land and three on rocky terrain (Fig. 6). These dairies depend chiefly for feed upon alfalfa and concentrates trucked to them, hence are not surrounded by pastures as are many dairies. The hog ranches shown on Plate III are all compact feeding establishments on rocky terrain. They rely for feed exclusively upon scavenging trucks which bring garbage from the more urbanized area to the west. Adjacent to and associated with one of these hog ranches is a "tin-can ranch" where cans are sorted and sold to nurseries as plant containers. Chicken ranches are scattered through the rancho, but are most concentrated on Highland Avenue between Central Avenue and Highway 66. On California Avenue a pigeon-raising and squab-selling establishment covers the back of a five-acre estate. The selling quarters and a few hives

of an apiary are located on the highway in the east of the rancho. Horses are not used as draft animals in this area of mechanized horticulture, but boarding and breeding stables are scattered through the rancho, several of which function as riding academies. The pasture associated with stables on the west side of Mountain Avenue north of Duarte Road is the largest area devoted to horses.

Residential Occupance

The largest continuous residential area of the rancho is in the northwest in Monrovia. Most of this area is filled with good houses, but individual districts range from poor through fair, good, and superior, to luxurious. The finest houses are east of the Sawpit Wash (Fig. 4). The poorest--occupied chiefly by Negroes and Mexicans--are between California and Shamrock Avenues, extending three blocks north and two south of the boulevard. Small districts devoted to residential use are scattered through the unincorporated section of the rancho. Houses in these districts are average to good except in the Davis Addition--inhabited by Negroes and Mexicans--where houses are substandard. Post-war building is adding two new residential districts to the southwest of the rancho and causing the construction of many scattered houses. Roads are being cut through several parcels of land in preparation for further extension of residential occupance. The portions of orange ranches devoted to residential use are generally attractive. Most ranch houses have pleasing grounds and all city conveniences except public transportation. A few citrus farmsteads comprise luxurious estates, suggesting that their owners have incomes other than from oranges. The most luxurious-appearing estate is on an orange ranch directly north of the substandard Davis Addition, emphasizing the characteristic uneven quality of housing. Trailer camps, a new kind of residential occupance, further emphasize this diversity. Except for the one on Peck Road, all trailer camps are directly accessible from Highway 66.

Commercial and Manufactural Occupance

Land devoted to selling establishments is aligned chiefly along the highway, but projects short distances along the most traveled north-south streets which intersect the boulevard. Restaurants, cocktail bars, novelty shops, service stations, nursery sales yards, and other vending establishments face the heavy

traffic which courses over this thoroughfare (Table 11). Motels and trailer camps add to the diverse occupance characteristic of the boulevard frontage¹ (Plate IV). The commercial occupance fronting Myrtle Avenue is both a deflection of that from Huntington Drive and a southward projection from the commercial core of Monrovia which centers on that street seven blocks north of the boulevard (Fig. 4). The extent and distribution of the rancho's manufactural areas are indicated by Plate III. All of its manufacturing plants belong in the category of light industry.

Rock Crushers

The part of the rancho over which the San Gabriel River has spread mantle rock is rich in building material. Rock is quarried from this riverwash and from adjoining sections of the Ranchos Azusa de Dalton and San Francisquito (Fig. 3). A great abandoned gravel pit between the Pacific Electric tracks and the Foothill Boulevard marks a place where profitable quarrying has ceased (Fig. 4). Land both north and south of Meridian Road is characterized by the pits, piles of sand, gravel, and crushed rock, tipples, bunkers, and fleets of trucks which mark active rock crushers.

Public Service Occupance Features

Scattered tracts within the rancho are used for tubercular sanatoria and other health-promoting institutions. The Los Angeles Sanatorium on Duarte Road is the largest of these both in the area it covers and in the patients it serves. There are five public elementary schools and one parochial school on the rancho. A Methodist and a Baptist church in the Davis Addition which serve the Negro community are the only churches in the unincorporated section, but in the Monrovia portion there are several small Protestant and one large Catholic church. The Monrovia Recreational Park occupies the irregularly shaped block north of the Pacific Electric between Shamrock and Mountain Avenues. A cemetery faces the south side of Duarte Road. Here and there spots of land are used for governmental services. Monrovia operates a pound and

¹Motels and trailer camps are classified in Plate III in the commercial category, although they might logically be classified with residential occupance as in Plate IV, inasmuch as some of them function as semi-permanent housing.

stores water pipe on Mountain Avenue on land set aside twenty-five years ago for a municipal camp ground. The Duarte post office occupies part of a building on the southwest of the intersection where the Foothill Boulevard joins Highway 66. The Los Angeles County Forestry Department operates a lookout tower and stores a fire engine on California Avenue near the south boundary of the rancho. The County Fire Department maintains a fire station on Las Lomas Avenue north of the highway.

Hydrographic Features of the Landscape

The Santa Fe Dam, built of loose boulders, is the most conspicuous hydrographic feature of the landscape, for it is 90 feet high and 24,100 feet long. Two-thirds of the dam and half of the 1330-acre detention basin it creates are on the Duarte rancho. Other than this dam, landscape forms which secure, transport, and store water are areally insignificant, though functionally vital. Most irrigation water used on the rancho comes from San Gabriel Canyon, but as this water is piped under the ground, the only surface features which give clues to the existence of this invisible pattern are storage reservoirs, division boxes, and standpipes. Deep wells are standby sources of irrigation water and permanent sources of most domestic supply. A small plot east of Peck Road along the rancho's south boundary contains pumping plants which supply the greater part of Monrovia's water. In the northeast a narrow belt of rocky terrain is used as a spreading ground to feed surface water into the Upper Canyon Basin (Fig. 7). The County Flood Control District uses part of the detention basin back of the Santa Fe Dam for spreading water to help replenish the Main San Gabriel Basin (Fig. 7). Monrovia is establishing a spreading ground along Sawpit Wash in the northwest of the rancho. Except for gravel ridges, water-spreading makes little imprint on the landscape, though it has significant influence upon the appearance of areas supplied with water from the augmented sources.

Background for Occupance of the Rancho

Boundaries

The Duarte rancho is roughly rectangular in shape, with a northeastward proruption extending toward the water from Fish and

San Gabriel Canyons. Its northern limit was originally defined as the sierra, but as the first formal survey established this line across foothills and mesas, it is not now a sharp physiographic boundary. The east boundary lies east of the present channels of the San Gabriel River (Fig. 4). In the southeast, section-line boundaries across fanglomerate supplant and clarify the vague boundary descriptions of early documents. As figures 2 and 3 reveal, the west boundary still influences occupance through its influence upon property lines.

TABLE 3

COMPOSITION OF POPULATION OF THE UNINCORPORATED
SECTION OF THE DUARTE RANCHO IN 1940^a

Population	Number	Per Cent of Total
Total	2,197	100.0
Male	1,015	46.2
Female	1,182	53.8
Total White	1,913	87.0
Native	1,563	71.1
Foreign-born	350	15.9
Non-White	284	12.9
Negro	252	11.5
Other Races	32	1.5

^aU. S. Bureau of the Census, Sixteenth Census of the United States, 1940. Population and Housing, Statistics for Census Tracts, Los Angeles-Long Beach, Calif. (Washington, 1942), pp. 161 and 181.

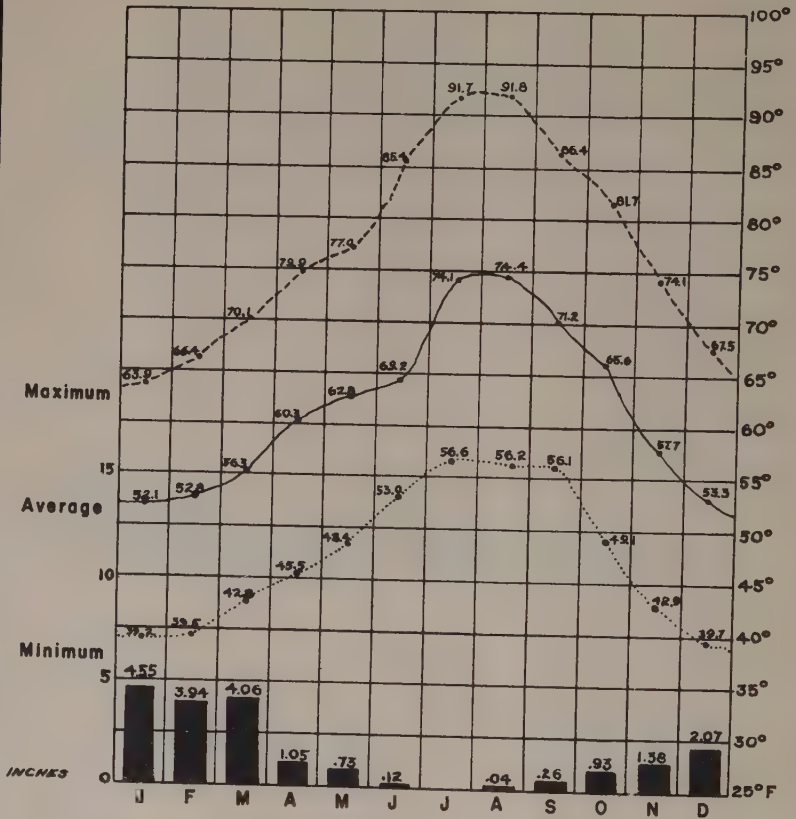
Population

The population of the unincorporated section of the Duarte rancho was 2,197 in 1940¹ and that of the Monrovia portion of the rancho was perhaps 4,000.² The total population as of July 1, 1947, is probably about 8,000. Of this number, 4,500 live in

¹Ibid., p. 134.

²Author's estimate. The exact rancho population cannot be precisely determined because the historical land unit does not correspond with census tracts. Tract 446 corresponds very closely with the unincorporated section of the rancho, but Monrovia is divided into two tracts, each of which includes part of the Rancho Azusa de Duarte. This rancho is now a part of the Monrovia Township.

RAINFALL AND TEMPERATURES AZUSA, CALIFORNIA



SOURCES, Climatic Summary of the United States,
Section 18 (Washington, 1932) p.10 - 29.
 Unpublished data from U.S. Weather Bureau,
 Pomona, California

FIGURE 5

Monrovia and 3,500 in the unincorporated area. The composition of population of the unincorporated area in 1940 is summarized in Table 2. This population was dominantly native white, but significant numbers were foreign-born whites and Negroes. Ninety-nine Mexicans comprised the largest foreign-born group.¹ Sixty natives of the Russian Empire or of the Soviet Union formed the next largest foreign-born group,² reflecting the presence in Duarte of the Los Angeles Sanatorium. Although this institution serves persons of all races and faiths, most of its patients and most of its staff are Jews, many of whom are of Russian origin. Thirty-one Canadians formed the third largest foreign-born group.³

Climate

The distinctive climate of the Los Angeles Lowland has been a conditioning and limiting factor in the region's sequent occupance. It has been a magnet drawing people to the region, thereby inducing that spread of urban and suburban functions and functional forms which is changing the face of the Duarte rancho. The San Gabriel Valley has the Csa climate of Köppen's classification, which is somewhat more continental than the Csb climate of the coastal area.⁴ The valley has a dry summer and a cool to warm winter during which some rain falls. Climatic statistics for Duarte are incomplete, hence records for the nearby station of Azusa are presented (Fig. 5). The southwest wind prevails in all months except March, when a gentle wind from the northeast prevails (Table 3). Although wind velocity averages but slightly over five miles per hour,⁵ an occasional gusty "Santa Ana" blows from the deserts to the north and east with strong velocity. The prevailing light ocean breeze moderates both winter and summer temperatures. After midnight a light mountain breeze usually sets in as a response to local pressure differences induced by differences in land and ocean temperatures.

¹U. S. Bureau of the Census, *op. cit.*, p. 217. Since the census returns all Mexicans as white unless obviously Indian, it is difficult to ascertain the number of native-born persons of Mexican ancestry included in the white population of Duarte.

²*Ibid.* ³*Ibid.*

⁴Preston E. James, An Outline of Geography (Boston, 1935), map, p. 65.

⁵J. Paul Goode, Goode's School Atlas (New York, 1932), p. 65.

TABLE 3

WIND DIRECTION, TEMPERATURE, AND RAINFALL
AZUSA, CALIFORNIA^a

	Length of Record in Yrs.	Months											
		J	F	M	A	M	J	J	A	S	O	N	D
Wind Direction	18	sw.	sw.	ne.	sw.	sw.	sw.	sw.	sw.	sw.	sw.	sw.	sw.
Temperature Degrees F.													
Average...	19	52.1	52.8	56.3	60.3	62.8	69.2	74.1	74.4	71.2	65.6	57.7	53.3
Average Maximum..	18	63.9	66.4	70.1 ^b	74.9	77.0 ^b	85.4	91.7	91.8	86.4	81.7	74.1	67.5
Average Minimum..	18	39.2	39.3	42.8	45.5	48.4	53.0	56.6	56.2	56.1	49.1	42.9	39.7
Absolute Maximum..	19	91	88	100	100	104	115	112	113	112	107	96	90
Absolute Minimum..	19	20	26	29	30	35	35	45	43	42	35	29	25
Rainfall in Inches													
Average...	23	4.55	3.94	4.06	1.05	.73	.12	T.	.04	.36	.93	1.37	2.07
Highest...	23	20.32	11.84	9.00	4.30	2.79	1.25	.06	.95	2.70	4.25	10.25	11.70
Lowest....	23	.15	.00	.50	T.	T.	.00	.00	.00	.00	.00	.00	.00

^aSources: Weather Bureau, op. cit., pp. 10-32, and unpublished statistics from the office
Weather Bureau, Pomona, California.

^bSeventeen-year record.

^c1908-1909.

^d1909-1910.

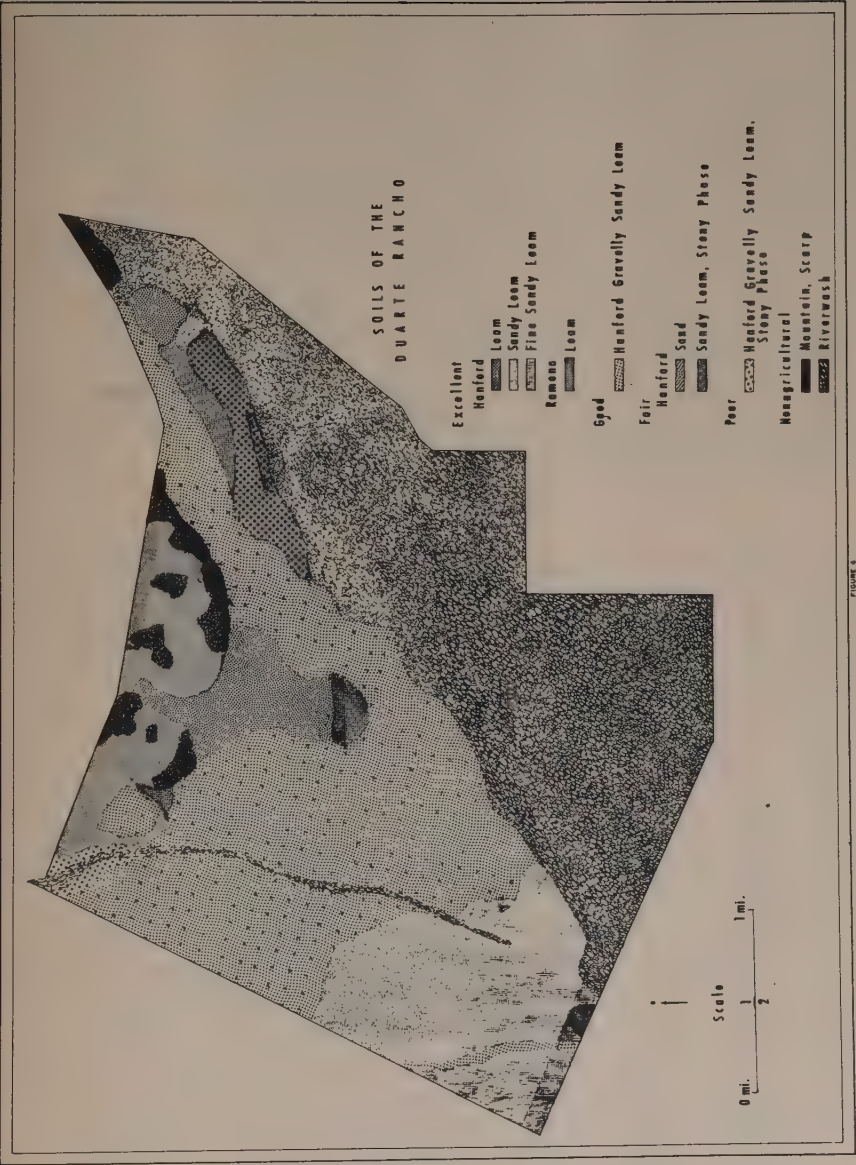


FIGURE 6

The annual rainfall at Azusa has averaged 19.23 inches over a twenty-three year period.¹ Practically all precipitation occurs in the form of rain; hail is rare and snow almost unknown. There is an average of 38 days per year with 0.01 or more inches of precipitation, but the number of rainy days and the total amount of rain vary widely from year to year.² In the twenty-three years represented by these statistics, Azusa received 33.87 inches of rain in one year, the maximum for the period, but in the next year received by 6.04 inches, the minimum for the period³ (Table 3). As subsequent chapters will reveal, such capriciousness has complicated the role light rainfall has played in the evolution of land use in the upper San Gabriel Valley. Temperatures average 52.1° F. in January, the coldest month, and 74.4° F. in August, the hottest month.⁴ Figure 5 depicts in graphic form the deviations of mean maximum and minimum temperatures from monthly averages. The wide range between absolute and average temperatures is presented in Table 3.

Soils

Soils of the Rancho Azusa de Duarte range in quality from excellent to nonagricultural. The distribution and quality of the rancho's soils are depicted by Figure 6. Most of the soils suitable for crops belong to the gray-brown Hanford series, but the agricultural soil in the foothills is a reddish Ramona loam.

Surface and Underground Water

Most of the irrigation water used on the rancho is diverted from the San Gabriel River near the mouth of the San Gabriel Canyon. Since wells supply domestic water for the rancho and supplement its irrigation supply, occupance is related not only to surface waters, but also to the great rock basins which underlie the piedmont and store water in the interstices of their loose gravel. The names and extent of the dike-enclosed basins which underlie the Duarte rancho are shown by Figure 7. This map shows also the service areas of the organizations which supply water to the various sections of the rancho.

¹U. S. Weather Bureau, Climatic Summary of the United States, Section 18 (Washington, 1932), p. 10.

²Ibid., p. 23.

³Ibid.

⁴Ibid., p. 28.

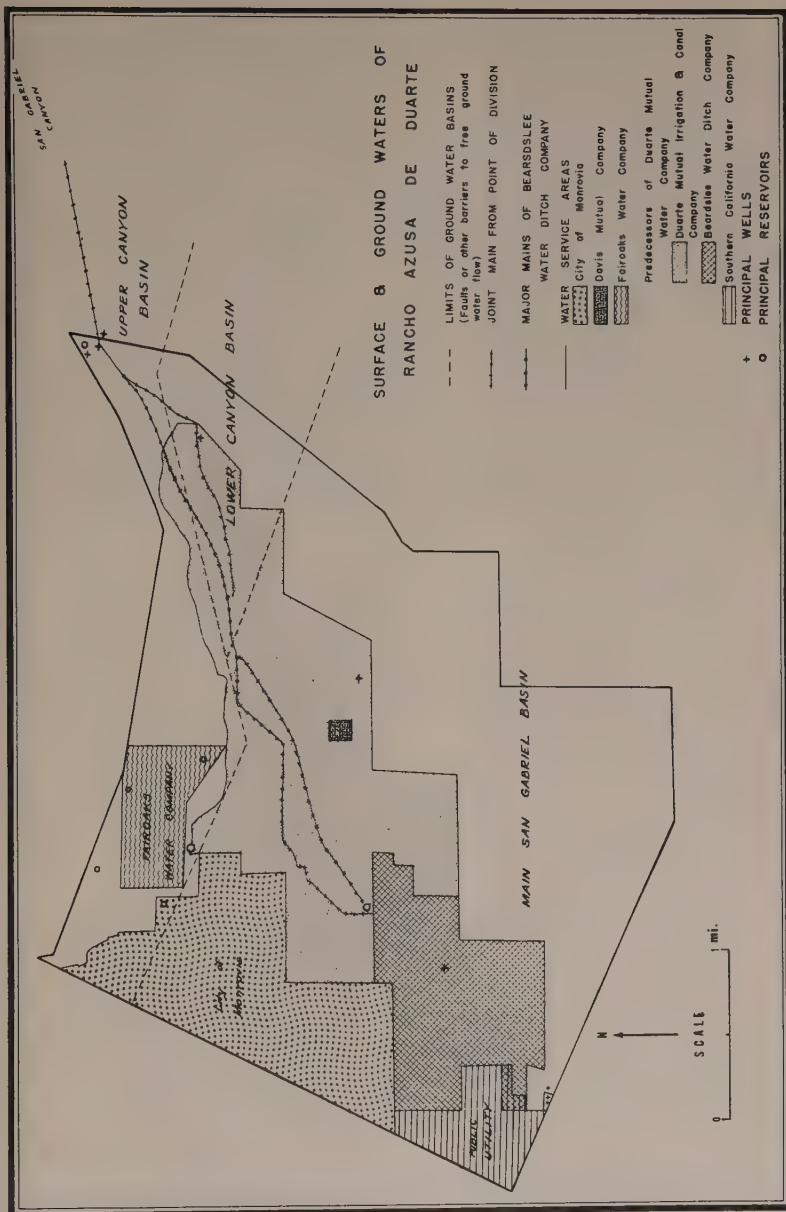


FIGURE 7

Problems Raised Concerning Sequent Occupance

The foregoing portions of this chapter have demonstrated that the Rancho Azusa de Duarte is a representative section of the upper San Gabriel Valley, have presented its current functional pattern, and have described certain factors which help condition that pattern. The present diverse occupance (Plate III) raises pertinent questions about the sequence of land use which has culminated in this areal pattern. What changes have occurred in the localization and character of the functional areas and why have they occurred? How has shifting occupance reflected adjustments to locational, climatic, economic, and historical factors? Has the rancho been and is it now a clear-cut land unit? What further changes in its occupance seem destined to occur because of the impact of Los Angeles and its satellites? These and other basic questions will be considered in later chapters.

CHAPTER II

OCCUPANCE OF THE SAN GABRIEL VALLEY BEFORE 1848, THE BEGINNING OF THE AMERICAN PERIOD

The landscape complex of the Rancho Azusa de Duarte depicted by Plate III has culminated from a long sequence of occupation. The purposes of this chapter are to reconstruct the landscapes of that sequence which existed in the San Gabriel Valley before the American period, and to account for the evolution of land use in that pre-American era when the ranchos were created.

Occupance and Economy of the Indian Period

The distribution of Indian population throughout California in pre-Spanish times followed in its major lineaments the present pattern of population distribution, with density highest in the coastal lowlands and lowest in mountains and deserts. The Indians of the upper San Gabriel Valley, later known as Gabrielinos, were concentrated where springs or streams provided water and oaks supplied acorns, their staple food.¹ Figure 8 pictures the territory of the Gabrielinos, the distribution of their principal villages, and the territory of their neighbors. The Gabrielinos grew no crops, but subsisted on what nature provided. They bartered surplus acorns with their fellow tribesmen of the coast and Santa Catalina Island, or traded for clamshells, the standard currency. Herbs, seeds, edible roots, grasshoppers, fish from canyon streams, rabbits and other game supplemented their diet of acorns. Their mode of life, which depended on food, remained unchanged for centuries. The stone mortars and pestles .

¹The principal oak of the upper San Gabriel Valley and of the canyons which open into it is the California live oak (Quercus agrifolia). White oaks (Q. engelmania) grow in a narrow belt in the upper piedmont. The scrub oak (Q. dumosa), is an important member of the chaparral association in the mountains, but is less widely distributed in the piedmont. Acorns from all of these oaks were nutritious and, once a laborious leaching process had extracted their bitter tannic acid, were palatable.

they used for grinding acorns have been found at various soil depths, indicating neither significant evolution nor retrogression in customs for perhaps thousands of years.¹

Before the mission period, California Indians lived in villages or rancherias which had an average population of about 130 persons.² Shelters were constructed of mud-smeared brush or tules on a framework of poles. Every village had its temescal or sweat-house and an enclosure for religious gatherings. From time to time a village was burned as a sanitary measure and a new one was built on a nearby site. Nothing in today's landscape suggests the former existence of these rancherias, for neither the baskets which characterized the Indian culture nor metates, the most important of their artifacts, left imprints on the landscape. Nevertheless, the concentration of Indian population on favorably situated sites was significant to the subsequent utilization of the land, for where native population clustered most closely, there the Spanish missionaries founded their establishments.³ Since it was impractical for the missionaries to bring the faith to all the villages, their inhabitants were brought to the mission. Thus the rancheria of Asuksa (Fig. 8)⁴ came under mission influence and its population was forced or enticed into the mission compound. Under the mission system, the scythe of western civilization mowed down the population and the Indians lost control of the land they had used for centuries. Thus the longest chapter in the sequent occupation of the upper San Gabriel Valley came to an end, for soon after its founding in 1771, the San Gabriel Mission controlled the entire valley.

¹A. L. Kroeber, "The Indians of California," in History of California, Z. S. Eldredge, Ed. (New York, 1915), V, 132.

²John Walton Caughey, California (New York, 1940), p. 29.

³Kroeber estimates California's pre-Spanish population as about 130,000, with 70,000 living in the vicinity of future mission sites between San Diego and San Francisco. "With a twentieth of the area of the United States, California, for all the deserts along its eastern border, held one-eighth of the native population of the entire country." (Handbook of the Indians of California, Smithsonian Institution, Bureau of American Ethnology, Bulletin 70 [Washington, 1925], p. 628.) The high death rate among California Indians has usually been attributed to liquor, poor sanitation, uncleanness, and diseases introduced by Europeans.

⁴Figure 8 shows the village of Asuksa west of the river, but there is evidence that it was at times on a hill east of the San Gabriel.

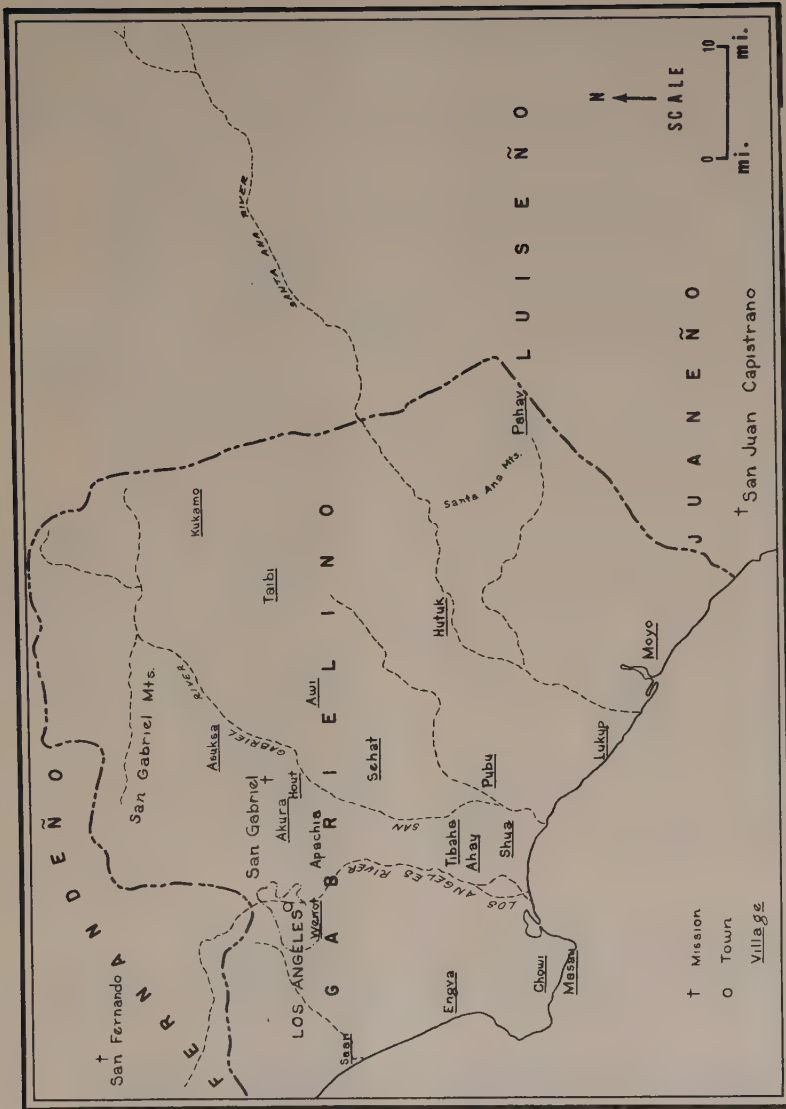


Figure 8.--Territory and Villages of the Gabrielino Indians

The Spanish Period

Political Geography and Colonization

Mission control of coastal California was an outcome of political geography as well as of christianizing zeal. California had been discovered and claimed for Spain in 1542, but 227 years elapsed between its discovery and the establishment on its soil of the first of a chain of missions. This long interlude was broken largely because the position of the region between expanding empires involved it in world politics. An immediate stimulus to settlement was the desire to establish ports where the heavily laden Manila galleons could break their voyages. As early as 1578-1579 the voyage and freebooting of Sir Francis Drake had challenged Spain's Philippine trade and her supremacy in the Pacific. By the middle of the eighteenth century, explorers from Hudson Bay posts were threatening to make British expansion in North America transcontinental. Intrusions of Dutch pirates into the Pacific and rumors that French navigators had discovered the long-sought but mythical Strait of Anian were further incentives to Spain to strengthen her outlying possessions. The need for action was immediate when Russia threatened to extend her Alaskan fur settlements down the Pacific coast of the North American mainland. California was thus colonized in a strengthening of Spain's frontiers. Once begun, colonization continued until Mexican independence in 1822 severed ties with the Spanish crown. The fifty-three years of the Spanish period bequeathed to Alta California twenty-one missions which transformed the use of lands under their jurisdiction and influenced occupancy long after Spain's political control had ended.

Institutions of Spain's Advance

In an attempt to forestall occupation of isolated Alta California by rival empires, the Spanish crown began in 1769 to plant strategically located settlements in this remote Mexican frontier. The basic institutions of penetration were those which had advanced and safeguarded other frontiers of New Spain. One potent agency was the mission, a center where Indian neophytes under the tutelage and discipline of the regular clergy, were shepherded along the road toward Christianity and Spanish civilization. Another aid to political penetration was the pueblo, a

village of agriculturists transplanted from an older to a newer frontier. The third major agency of colonial advance was the presidio, an army post in Indian country. With these frontier institutions, Spain controlled the narrow coastal margin of Alta California from San Diego northwestward beyond San Francisco Bay, acquiring a foothold advantageous for dominating an extensive inland area. The growth and functioning of these institutions was retarded, however, by remoteness and inherent isolation from Mexico City, the ecclesiastical and political capital. The aridity of the intervening land, roughness of its terrain, and paucity of its resources impeded mission development and repelled settlers. Crises in supplies were frequent during the early years, for the little settlements depended upon ships from San Blas on the Mexican mainland, and if the supply ships were late, starvation threatened.¹

The San Gabriel Mission

The Mision San Gabriel Arcángel, fourth to be established in the chain of Franciscan missions of Alta California, was founded September 8, 1771. This mission began the series of landscape transformations which have culminated in the occupance pattern which now characterizes the San Gabriel Valley. To this subtropical valley the Spanish friars transferred the livestock herding, grain growing, and horticulture of arid Mexico and dry-summer Spain. Soon the mission supplanted the self-sufficiency of the Indian with an economy which transferred to itself responsibility for providing food, shelter, and clothing. This new economy required stock raising, farming, carpentry, masonry, blacksmithing, and other basic trades which helped create new and distinctive landscape features.

The mission was first established along the river on the west side of the Paso de Bartolo or Whittier Narrows, a break in the hills which separate the San Gabriel Piedmont from the Coastal Plain (Plate I). Here the padres found running water, fertile

¹The first missionaries and soldiers came to San Diego with their mules and cattle over the difficult trails of Baja California. Fray Junipero Serra, founder of the first missions, said that to supply settlements by this route would require the constant services of a train of 1,500 mules--many times more than could be fed and watered along the trail. (Caughy, *op. cit.*, p. 142.) In 1772 starvation at the mission and presidio at Monterey was averted by a bear hunt organized by the governor.

land, abundant vegetation, and nearby rancherias to furnish a rich field for missionary work. The first year's crops, however, were drowned out, and in 1775 the padres moved their mission to higher ground five miles to the north.¹ On this permanent site, they built temporary structures of brush and poles which they soon supplanted by adobe buildings aligned in the form of a quadrangle. Arranged about the church within the quadrangle were corrals, gardens, orchards, vineyards, and cultivated fields. More remote were the pasture lands.

The mission occupied a position midway between San Diego and Santa Barbara along El Camino Real, the trail which connected the coastal settlements. The passes which tie the Los Angeles Lowland with the inland deserts (Plate I) helped make the mission a focus also for travelers who braved the deserts to reach the coastal settlements from the plateau of Mexico or from the American outposts. Since all overland travel was by horseback, however, the nodal situation of the mission was immediately conducive to few occurance features other than converging trails.²

Grazing was the major form of land use in the mission period. Native grasses and alfilaria (Erodium circutarium) furnished excellent pasturage, whether brown in summer or green in winter. Supplementary hay or grain for winter feed and barns for winter shelter were unnecessary because of the open winter. With Indian herders to prevent stock from becoming lost and to protect it from wild animals and hungry gentile natives, herds and flocks multiplied rapidly.³ As the livestock increased, the lands over

¹The site of "El Misión Viejo" is still subject to flooding. Oil derricks, highways, and recreational features based on the high water table now dominate the Paso de Bartolo, site of the first San Gabriel mission.

²The route of El Camino Real, most important of these early trails, approximates that of the Santa Fe between San Diego and Los Angeles and the Southern Pacific's Coast Route from Los Angeles to San Francisco. It approximates also the route of U. S. Highway 101.

³Accounts vary as to the number of livestock pastured on mission land. Father Zephyrin Engelhardt who had access to such records as exist, gives smaller figures than those given by visitors to the mission. He says that the official report for 1829 lists 25,000 cattle, 15,000 sheep, 2,000 horses, and 150 mules. (The Missions and Missionaries of California [San Francisco, 1908], III, 632.) There were smaller numbers of goats and hogs. The Indians would not eat pork, but lard was used in soap-making, an important mission industry.

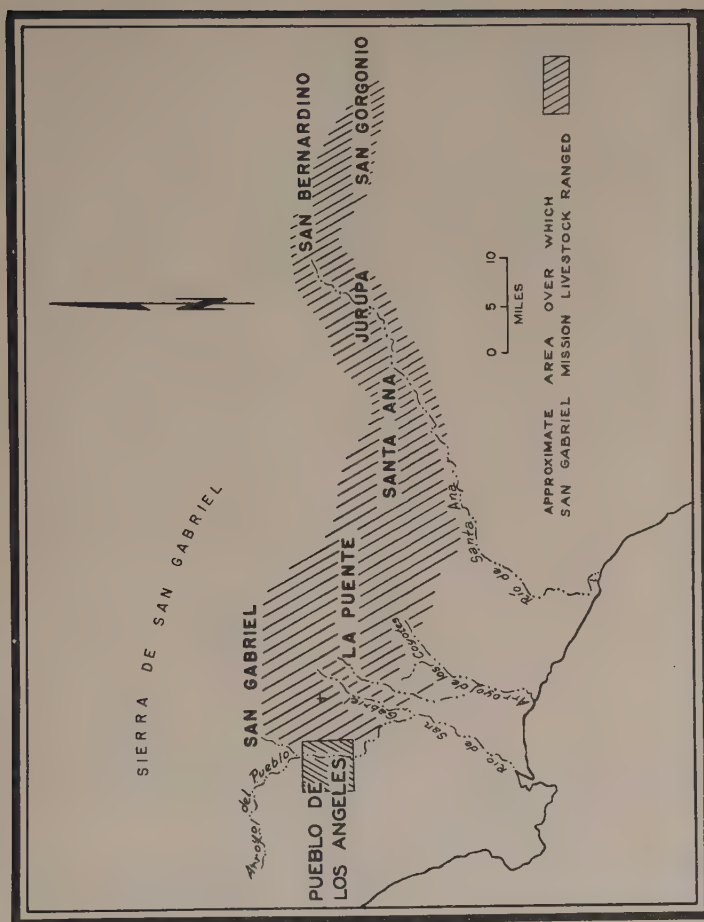


FIGURE 9. MISSION PASTURES AND PRINCIPAL RANCHOS

which the mission assumed control expanded. Westward they extended to the Arroyo Seco and the pueblo of Los Angeles. Southwestward they stretched some six leagues¹ to the Rancho San Pedro and southward they reached into the coastal plain. Eastward, according to the mission head, the lands extended

toward the Colorado some 20 odd leagues, in which confines are found the Ranchos La Puente, a little more than 4 leagues--Santa Ana, distant about 10 leagues; at the distance of 15 leagues another called 'Jurupit,' and to the San Bernardino it is about 20 leagues, all belonging to the Mission; and following the same line about 27 leagues, a rancho called San Gorgonio.²

To the north the mission land extended into the sierra where canyons gave access to timber. The approximate extent of the area over which mission livestock ranged, together with the names of the principal mission ranchos, is pictured by Figure 9. Cattle bearing the mission brand grazed and found water³ on the land to become the Rancho Azusa de Duarte which lay west of the center of the great mission domain.

Although crops on mission lands did not attain the proportions of cattle raising, they were so significant that the San Gabriel mission became known as the "mother of California agriculture." Floodplains were planted to corn and many upland acres were used for dry farming. Corn, beans, wheat, and barley became the staples, but the friars experimented with horticultural crops. They grew vines and fruit trees from slips and seeds brought from Baja California, creating in this distant land the atmosphere of their native Soain. Their gardens, orchards, and vineyards, which

¹One Spanish league equals 4.42 km. or 2.63 English statute miles, although the term was used loosely in early California.

²Report of the mission head, Father José Bernardo Sánchez, quoted by Fr. Zephyren Engelhardt in The San Gabriel Mission and the Beginnings of Los Angeles (Chicago, 1927), p. 141.

³In his memoirs, A. T. Blain, a specialist in water problems and water rights, describes an old ditch from the San Gabriel Canyon which could be easily traced when he came to Duarte in 1882. It crossed the Sawoit Wash near the present Huntington Drive (Fig. 4). "It had a wide bottom and high bank. It had been pretty well cultivated up through what is now Monrovia, but both east and west of the Santa Anita Wash it was still unbroken. I have always believed that the Mission fathers, and others later, used the plains for pasture and ran water out to their watering pools for their stock. There used to be plenty of these pools in southwestern Duarte, southern Santa Anita, and northwestern San Francisquito, but cultivation has wiped them off the face of the earth." (MS, 1935, in the files of the Beardslee Water Ditch Company, Duarte, California.)

covered about 190 acres,¹ demonstrated that the San Gabriel Valley is Mediterranean in its crop possibilities. A description of the activities of the padre who came to head the mission in 1806 suggests features of the valley's first horticultural occupance:

He it was who planted the large vineyards, intersected with fine walks, shaded by fruit trees of every description, and rendered still more lovely by shrubs interspersed between; who laid out the orange garden, fruit and olive orchards; built the mill and dam; made fences of tunas (Cactus opuntia) round the fields; made hedges of rose-bushes; planted trees in the mission square, with a flower garden and hour-dial in the center; brought water from long distances, etc.²

An American who, as a supercargo, had traded with the San Gabriel mission wrote of horticulture and the trade based on viticulture:

There are several extensive gardens attached to this mission, where may be found oranges, citrons, limes, apples, pears, peaches, pomegranates, figs, and grapes in abundance. From the latter they make from four to six hundred barrels of wine, and two hundred barrels of brandy, the sale of which produces an income of more than twelve thousand dollars.³

Mission architecture helped set styles in building. The first homes of the Los Angeles Lowland, like the first mission buildings, were temporary structures of poles covered with tules or with grass and enclosed in a stockade of palings. As the Indians became adept at making adobe bricks and tile, permanent buildings were erected in the mission compound. The first rude homes throughout the valley were also followed by adobe structures which arose from the soil. Dearth of timber and propensity to earthquakes contributed to the solid construction of low buildings. The sturdy mission architecture has been so widely adopted and adapted for various uses that, even though lacking the original simple functional traditions, it is a living presence in the landscape.

Mission trade set the commercial pattern which lingered in the Los Angeles Lowland long after the missions were secularized and their lands distributed among rancheros. Within a few decades after its establishment, the San Gabriel mission had goods

¹Claude B. Hutchison, Ed., California Agriculture (Berkeley and Los Angeles, 1946), p. 12.

²Hugo Reid, "The Indians of Los Angeles County," in letters to the Los Angeles Star, 1852. Reid, a Scot, came into possession of the Rancho Santa Anita through marriage to an Indian woman of the mission and naturalization as a Mexican citizen.

³Alfred Robinson, Life in California (New York, 1846), pp. 32-33.

beyond the needs of neophytes, guests, and hungry presidio garrisons at San Diego and Santa Barbara. This surplus was traded for goods carried by sailing ships to San Pedro, though trade was officially forbidden by church and state until 1822 when the new Mexican regime relaxed restrictions. Cattle hides¹ and tallow were the major items bartered, but grain and goods fabricated in mission workshops--coarse blankets and fabrics, saddles, soap, pottery, baskets, wine, brandy, wheat and flour--were traded for such luxuries as liquors, silks, satins, and laces. The observations which Harrison G. Rogers recorded in his journal give insights into the use of land in the San Gabriel Valley during the mission period and into the activities which supported mission trade.

November 29, 1826. The mansion, or mission, consists of 4 rows of houses forming a complete square, where there is all kinds of macanicks at work; the church faces the east and the guard house the west; the N. and S. line comprises the work shops. They have large vineyards, apple and peach orchards, and some orange and some fig trees. They manufacture blankets, and sundry other articles; they distill whiskey and grind their own grain, having a water mill, of a tolerable quality; they have upwards of 1,000 persons employed, men, women, and children. The situation is very handsome, pretty streams of water running through from all quarters, some thousands of acres of rich and fertile land as level as a die in view, and a part under cultivation, surrounded on the N. with a high and lofty mou., handsomely timbered with pine, and cedar, and on the S. with low mou, covered with grass. Cattle --this mission has upwards of 30,000 head of cattle, and horses, sheep, hogs, etc. in proportion. They slaughter at this place from 2 to 3,000 head of cattle at a time; the mission lives on the profits.

Dec. 1, 1826. This mission ships to Europe annually from 20 to 25 thousand dollars worth of hides and tallow, and about 20 thousand dollars worth of soap. There vineyards are extensive; they make their own wine and brandy; they have oranges and limes growing here. The Inds. appear to be much altered from the wild Indians in the mou. that we have passed. They are kept in great fear; for the least offense they are corrected; they are compleat slaves.

Dec. 13. I walked through the work shops; I saw some Inds. blacksmithing, some carpentering, others making the wood work of ploughs, others employed in making spinning wheels for the squaws to spin on.

Dec. 19. This mission, if properly managed, would be equal to a mine of silver or gold; there farms is extensive; they raise from 3 to 4,000 bushels of wheat annually, and sell to shippers for \$3. per bushel. There annual income, situated

¹In the absence of currency, hides became the principal medium of exchange. Traders up and down the Pacific coast referred to them as "California bank notes."

as it is and managed so badly by the Inds., is worth in hides, tallow, soap, wine, ogadent,¹ wheat, and corn from 55 to 60,000 dollars.²

The Pueblo of Los Angeles

The pueblo system has exercised a cumulative impact on the use of land in the San Gabriel Valley because of the proximity and burgeoning of Nuestra Señora la Reina de Los Angeles de Porciuncula. This pueblo was founded in September, 1781, on the site of a former Indian village which had been previously described by Father Juan Crespi as "having the resources of a large town."³ Officials hoped that this new agricultural village would help feed the presidios and free them from dependence on the uncertain supply ships from San Blas. With royal approval, the little pueblo was founded nine miles west of San Gabriel in the center of a tract of thirty-six square miles where brush and cactus were cleared for a plaza and adjoining homesites. Despite generous subsidies, only eleven families comprising forty-four persons of low social position could be induced to migrate to this new pueblo on the distant frontier of New Spain. By 1800, however, the pueblo was second in Alta California's agricultural production only to the San Gabriel mission. In the first few years of its existence, it grew chiefly from natural increase and from soldiers who settled there upon their discharge from a military garrison. By 1790 the population had grown to 141, and by 1810 to 365.⁴ By 1834 colonists from higher social levels arrived from Mexico and by the next year, Los Angeles had a population of 1,500 and was the largest town in all Alta California.⁵ As the pueblo's population continued growing (Table 1), its impact upon the surrounding area mounted.

¹"Ogadent" was doubtless a frontier form of spelling the word "aguardiente," a kind of brandy.

²The Journal of Harrison G. Rogers," in Harrison Clifford Dale, The Ashley-Smith Explorations and the Discovery of a Central Route to the Pacific, 1822-1829 (Glendale, California, 1941), pp. 200-212.

³Quoted by J. M. Guinn in History of California (Los Angeles, 1907), I, 66. Father Crespi was the diarist of the Portolá expedition which in 1769 had camped on the site of the future pueblo.

⁴Nellie Van De Grift Sánchez, Spanish Arcadia (Los Angeles, 1929), p. 182.

⁵Ibid.

Presidios

Of the three institutions which spearheaded Spain's penetration of Upper California, the presidio exerted least direct effect on the use of land in the San Gabriel Valley. There was no presidio in the Los Angeles Lowland, although a detachment of presidio soldiers was assigned to the missions.¹ Indirect effects of the presidio system were reflected in the area later, however, when grants of land were made to Andrés Duarte and certain other honorably discharged soldiers.

The Mexican Period

In the turbulent period of Alta California's history when the province was a part of Mexico (1822-1848), distinctive occupance features arose in response to secularization of the missions, the rise of ranchos, penetration by Americans, the discovery of gold in the foothills of the Sierra Nevada, and war with the United States. Though its role was that of bystander in Mexico's revolt from Spain, California knew of brewing trouble by the absence of the San Blas supply ships. With supplies lacking, the missions had to open their warehouses to feed the ragged, unpaid soldiers. The contrast between mission plenty and garrison poverty engendered bitterness which stimulated sentiment for secularization of the missions and their land. An occasional smuggling ship of European registry or an infrequent legitimate Peruvian ship somewhat mitigated shortages, but Boston fur ships became the chief substitutes for those from San Blas.

Secularization of the Missions

Secularization of the missions was significant to the sequent occupance of the San Gabriel Valley, for it brought the era of the missions to a dramatic close and ushered in the rancho period. Although title to their land was usufructuary rather than absolute, the missions monopolized the coastal land from San Diego to San Francisco. With hundreds of acres for each neophyte and a shortage of land for settlers, secularization, or some other scheme for land redistribution, was becoming an economic necessity. The

¹The mission of San Gabriel was not the only one in the Los Angeles Lowland. Twenty-six years after it was founded, the San Fernando mission was established in the San Fernando Valley.

Mexican Congress enacted a secularization law in 1833 to go into effect in California the following year. This law provided that the Indians were to receive half of the mission lands but denied them power to dispose of it, and specified that they were to receive seed and livestock and were to work on essential enterprises. Under this law, commissioners were appointed to take charge of mission property and superintend its subdivision among the neophytes, but under their improvident management, the commissioners enriched themselves, the Indians disposed of their lands, movable mission property disappeared, and buildings were neglected. When convinced that disaster to their institutions could not be averted, some missionaries apparently attempted to liquidate the mission properties through rapid slaughter of cattle for hides and tallow.¹ At San Gabriel the ditches were untended, olive groves were felled for firewood, and orchards and vineyards suffered from lack of care.² With discipline removed, the mission Indians relapsed into degraded poverty among the inland gentile tribes or remained in the Los Angeles area where they were demoralized by liquor and contact with frontier pueblo life. A few returned to the secularized mission,³ and some supplied the new rancheros with a surplus of servants and vaqueros.

Rise of the Ranchos

Upon the overthrow of Spanish rule, the Mexican government succeeded to rights in the public domain previously vested in the Spanish crown. The republic liberalized the land policy of its border provinces, and through secularization restored to the public domain the land which had been held by the missions. It granted away this land willingly and without compensation. The only requirements were that the grantee should be a Mexican citizen, should occupy the land, stock it with cattle, build a house on it, and plant some trees. The law revealed understanding of the cattleman's needs in a semiarid land, for it required that the area of a land grant be not smaller than one square league--about 4438.5 acres--nor larger than eleven square leagues. However, the

¹Hubert Howe Bancroft, The Works of Hubert Howe Bancroft (San Francisco, 1886), XX, 348-351.

²Ibid.

³In 1843 the mission church and over five acres of adjoining land were given back to the padres. Since 1850 the mission church has been a parish church.

law imposed no restrictions upon the acquisition of land beyond the maximum of eleven square leagues by purchase, marriage, gift, or inheritance. In the thirteen years between the passage of the Secularization Act in 1833 and the beginning of American occupation in 1846, California governors granted over five hundred concessions to private claimants.

At the time of the American conquest, these great landholdings were the dominant feature of California life. They remained the controlling factor in much of the state's settlement and agricultural development for nearly half a century, and their gradual conversion into cities, towns, and farming communities in large measure brought into being the southern California we know today. The ranchos thus constituted one of the few enduring legacies California inherited from Mexico and Spain.¹

The applicant for a rancho filed with the prefect of his district or with the governor a petition which affirmed his Mexican citizenship, described the desired tract, and gave assurance that no part of it was included in a previous grant. He accompanied his petition with a diseño of the desired land which showed its natural boundaries, landmarks, and the names of contiguous grants, if any. If the prefect reported favorably on the concession, the governor made a formal grant to the petitioner. An official survey was then made, invariably with complete absence of accuracy and precision. Scant attention was paid to exact boundary limits unless watering places were involved. The phrase más o menos (more or less) used in describing the number of square leagues conveyed aptly expressed the prevailing indifference toward precise metes and bounds. Vague boundaries and uncertain usufructuary titles sufficed for Mexican rancheros when land was abundant and population scant,² but after the American conquest, they were to cause prolonged and costly confusion.

Creation of the Rancho Azusa de Duarte

The Rancho Azusa de Duarte came into existence as a land unit on May 10, 1841, when it was granted to Andrés Duarte who had served as a soldier of Mexico in his native Alta California. After

¹Robert Glass Cleland, The Cattle on a Thousand Hills (San Marino, California, 1941), p. 33.

²Estimates of the total white population of California before the conquest vary from 5,000 to 7,000. In the Los Angeles area there were probably not over 2,500.

his discharge from military service, Duarte lived in the growing pueblo of Los Angeles where he had difficulty taking care of his stock in the public pastures--stock which would aid him in securing a grant of land. He therefore appealed to the prefect:

Andrés Duarte, resident of this city, declares before your Excellency with due respect and in accepted legal form that: having succeeded in getting together; through my own efforts and work, some three to four hundred head of neat cattle and horses, and it being difficult for me to take proper care of their increase due to lack of land suitable for that purpose, I apply to your Excellency's authority, entreating that, after you have examined the accompanying sketch, you will see that this, my petition, may go through the customary formal course of law until it finally reaches the Departmental Government; trusting that, being aware of my good character, you may have the kindness to recommend my petition, a favor which would prove a benefaction to my family.

The above-mentioned sketch¹ shows clearly that the land I solicit is a little over a league in length and about half in width,² some of the land considered to belong to the San Gabriel Mission. It is adjacent to the Rancho of Don Luis Arenas, called Azusa, the same name as of the one I solicit, and to the Rancho Santa Anita, belonging to the wife of Don Hugo Reid; but this petition will cause no detriment to these two estates nor to any other property, as may be ascertained by the reports which may be legally obtained, as is usually done in such cases. In view of which, I beg and entreat that, considering my modest petition, you may deign to look upon it with favor, according to Your Excellency's characteristic integrity.

Angeles, April 28, 1841. (Signed at the request of Andrés Duarte who does not know how to write.)

(Signed) Felipe Carrillo³

Upon receipt of Duarte's petition, the prefect ordered an investigation by the alcalde,⁴ whose report gives clues to the use of San Gabriel Valley land following secularization:

The tract solicited by Andrés Duarte, resident of this place, although considered as belonging to the mission of San Gabriel, I know by inspection to be unoccupied and without any

¹This sketch is presented as Figure 10.

²Although the land for which Duarte petitioned is here described as a little over one-half a square league, later documents describe it as of "one and one-half square leagues, a little more or less."

³Translation of Duarte's petition from a photostatic copy of the Duarte expediente made available through the courtesy of the Henry E. Huntington Library, San Marino, California.

⁴The alcalde was then Ygnacio Palomares, prominent in the life of the pueblo and grantee of the Rancho San José upon which Pomona is now the major urban center.

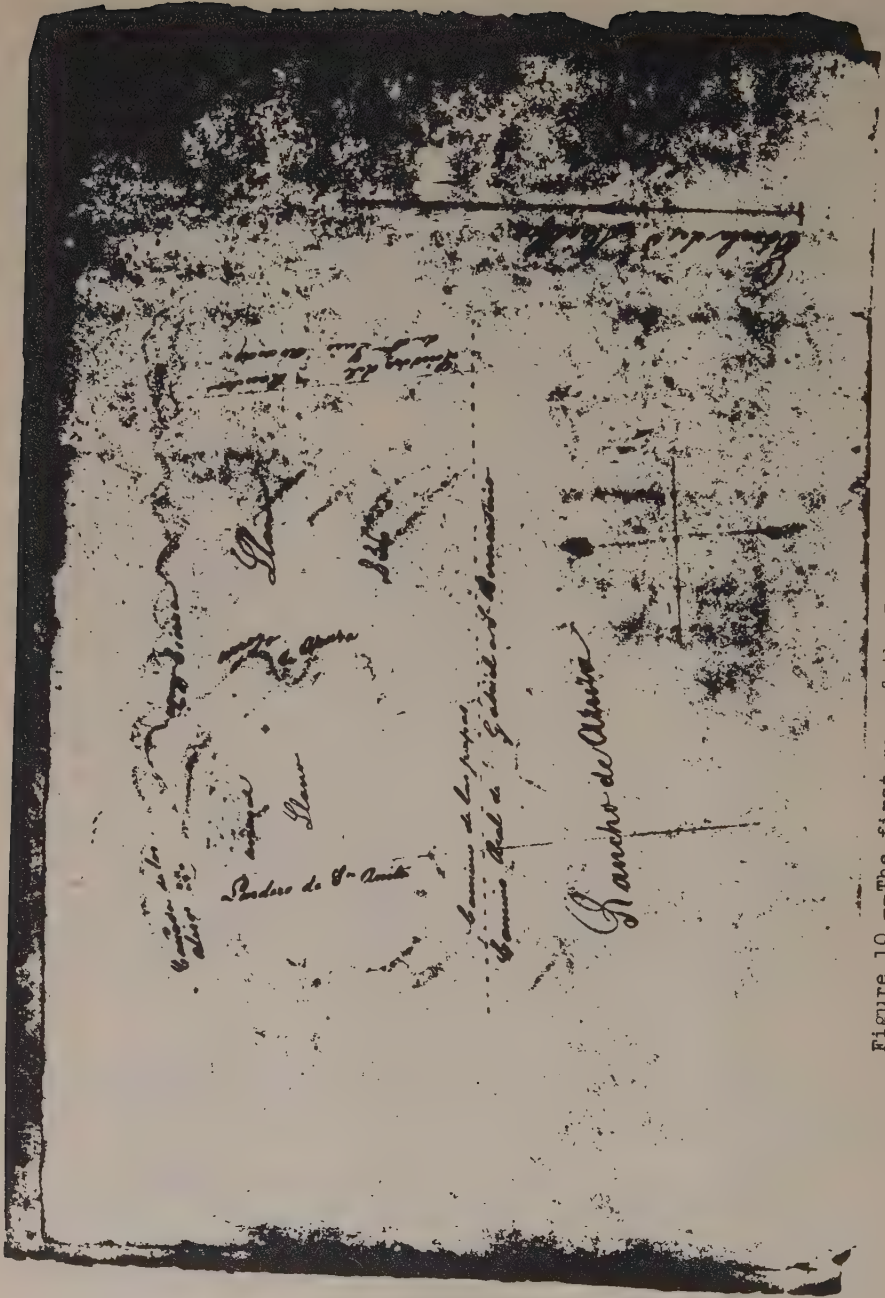


Figure 10.--The first map of the Rancho Azusa de Duarte

stock of that establishment. . . . Wherefore, if your Honor be so inclined, a favorable report for the petitioner can be made.¹

The friar in charge of the mission church implicitly verified the vacancy of the land by reporting that granting it would in no way prejudice the mission.² Thereupon the prefect wrote the governor:

There is no obstacle to the grant being made as he (Duarte) has the requisites he must have in order that his claim be entertained: He is owner of sufficient stock, neat cattle and horses, to stock the premises; he is a Mexican citizen of good habits who honorably served as soldier and corporal in the company of San Diego until he obtained his discharge.³

Governor Juan B. Alvarado granted Duarte's "modest petition" on May 10, 1841, whereupon the alcalde served notice upon the owners of adjoining ranchos that he proposed to survey the land Duarte sought and put him in possession of it. Only Hugo Reid of the Rancho Santa Anita objected, but he was reconciled by the adoption of the boundary which still divides the Ranchos Santa Anita and Azusa de Duarte (Fig. 3). Two line-bearers were appointed to make the survey, beginning their task by measuring a rawhide rope of 100 varas⁴ which they fastened to the ends of poles. One line-bearer on horseback planted his long pole at the point of beginning on the bank of the "River Azusa" on the boundary of the Azusa rancho of Arenas⁵ while the second bearer galloped to the end of the rope to plant his stake. Thus 5,000 varas were measured "close to the sierra" for the north boundary of the new rancho. The course was turned southward at a point where "an oak was marked for a landmark with a few strokes of the cutlass."⁶ From this landmark the bearers marked off 5,000 varas as the line of demarcation with the Rancho Santa Anita, stopping at a "tall alder which was burned at the foot."⁷ Thence a line was measured

¹California Land Claims, Vol. VI, "Supreme Court of the U. S., No. 206. The United States, Appellants, vs. Andrés Duarte. Appeal from the District Court U. S. for the Southern District of California." The Duarte case is one in an incomplete collection of briefs of land grant cases which the California State Library, Sacramento, has assembled and titled California Land Claims.

²Ibid. ³Ibid.

⁴The California vara was the equivalent of 33 inches.

⁵This rancho later became the Rancho Azusa de Dalton.

⁶California Land Claims, op. cit.

⁷Ibid.

5,000 varas eastward to the river, whence the course was changed northward and 5,000 varas were measured for the east boundary of the new land unit, the survey ending "at the foot of the sierra at the north."¹ Upon conclusion of this survey, Don Andres was enjoined to set up landmarks at appropriate spots, "of which in-junction he took due notice."²

Rancho Occupance and Life

Life and Layout of the Ranchos.--Except for a few luxuries obtained from trading ships, each California rancho during the Mexican period was nearly a self-sustaining unit. The simple pas-toral life centered around the thick-walled adobe home of the ran-cherero. Some distance from this casa was the matanza or butchering area. Barns and animal shelters were almost unknown. Families were large and hospitality generous. In return for their living, Indians provided cheap labor, serving as vaqueros, farm workers, artisans, and household servants. On some ranchos they lived in an indiada, a cluster of brush huts near the main casa; on some they lived in jacales or brush huts away from the ranch center. On the Duarte rancho there were both indiada and jacales. Most rancheros owned one or more ox-carts or carretas, but communica-tion upon the rancho and between neighbors was chiefly by horse-back.

Californians had many opportunities to display their skill in horsemanship at the rodéo, an important institution in the pas-toral Los Angeles Lowland with its unfenced ranges.³ A magistrate issued a proclamation setting the time for it, which was usually in the fall or in May. When the day arrived, vaqueros drove the cattle to the designated place where herds were divided according to earmarks and brands. Young calves were given an earmark and animals over a year old were branded.⁴ The affair was conducted under the supervision of a field judge (juez de campo) who settled disputes and carried out regulations. The rodéo was a gala occa-sion with entire families often camping near the dusty branding area to renew acquaintances.

¹Ibid. ²Ibid.

³So vital to California's cattle economy was the rodéo that the first state legislature of the American period enacted statutes to legalize the Mexican customs which had governed it.

⁴Each ranchero had his own registered branding iron. Ear-marks were also registered.

Free from the pressure of economic competition, ignorant of the wretchedness and poverty indigenous to other lands, amply supplied with the means of satisfying their simple wants, devoted to "the grand and primary business of the enjoyment of life," the Californians enjoyed a pastoral, patriarchal, almost Arcadian existence until a more complicated and efficient civilization invaded their "demiparadise."¹

Life and Layout of the Rancho Azusa de Duarte.---Andrés

Duarte built a temporary shelter in the northeast of his new rancho near the spring which had helped give rise to the Indian village of Asuksa (Fig. 8). There he and his family lived for a time in temporary shelters before building their permanent home---a low, oblong adobe with a thatched roof. Like most ranch houses, it was built on high, open ground devoid of trees and shrubbery might mask the approach of marauding Indians. Walls were thick and windows deep (Fig. 11). The house was unheated save for a pan of coals, though after the conquest a chimney and a shingled roof were added. Baking was done in an outdoor oven, a feature inherited from Spain. There were Indian servants and vaqueros, but not the scores of retainers who served the larger ranchos.

The stipulations of Governor Alvarado's grant to Duarte required the establishment of simple occupance features such as characterized most ranchos during the grazing era:

1. He may fence it without prejudice to the cross-roads, highways, and rights of way; he may enjoy it freely and exclusively, devoting it to such use or cultivation as may best suit himself, but within one year he shall build a house upon it and it must be inhabited.

2. He shall petition the judge who has jurisdiction to give him juridical possession. . . . This judge shall mark out the boundaries on which there shall be placed, besides the landmarks, some fruit or useful forest trees.

3. The tract in question is of one and a half square leagues, a little more or less, for neat cattle. . . . The judge . . . shall measure the land, any surplus that may result remaining the property of the nation for its uses.

4. If he contravenes these conditions, he shall lose his right to the land and it may be denounced by another.²

A ditch dug in the early 1850's was perhaps the most significant occupance feature constructed by Andrés Duarte, for many

¹Cleland, op. cit., p. 44.

²California Land Claims, op. cit. These four requirements were nearly identical in all expedientes pertaining to California land grants. The drastic penalty named in the fourth stipulation was seldom imposed, although the Rancho San Pasqual on which most of the city of Pasadena now stands was twice denounced successfully.

phases of the rancho's subsequent use have been dependent upon water rights traceable to water-diversion through this ditch and the pipe lines which supplanted it. Through this ditch Don Andres, who claimed half of the stream-flow, diverted water from the San Gabriel River where it emerges from the San Gabriel Canyon (Plate I). Before digging this ditch, he apparently had obtained water only from the "Indian Spring" at the foot of the sierra.¹ In the vicinity of his home he planted fruit and shade trees and set out a small vineyard. To keep stock away from this planted area, he set out a tuna hedge, a patch of which still remains at the foot of the mountains. Some distance from his house was the calaveras or slaughtering corral where Indian butchers prepared carne seca, the staple food. Milk was little used, for the half-wild cows were valued as sources of hides, tallow, and meat. Furthermore, there were no milk pails in California. A few animals were used as work oxen to draw the primitive plough and haul the lumbering carreta. As on other ranchos, the numerous dogs were useful in disposing of offal left in the wake of the matanzas.

Andrés Duarte was prosperous in 1845 and 1846² when the rancho system dominated every phase of life in the Los Angeles Lowland, but he was not long to enjoy peaceful possession of his property. War, conquest, the gold rush, and their aftermaths soon uprooted the simple pastoral occupation typified by his rancho. The Battle of the San Gabriel River at the Paso de Bartolo ten miles away (Plate I) was the nearest the American War came to his land. With the signing of the "Cahuenga Capitulation" a few days later on January 13, 1847, the war was over, so far as California was concerned. Thereafter the landscape of the Azusa de Duarte, like that of other ranchos, was to reflect the supplanting of Mexican laws and customs by those of the United States.

Influences Promoting Pastoral Occupation

Local Influences.--To use their land for pasture was natural for Californians. Like Andrés Duarte, many of them were dis-

¹For nearly sixty years water from the "Indian Spring" was piped to a little reservoir and used to help irrigate an orange grove. During heavy rains in 1938 the spring caved in and no use of its water has since been made.

²In 1845-46, despite political confusion, California exported 80,000 hides and 1,500,000 pounds of tallow. (Cleland, op. cit., p. 46.)

charged soldiers familiar with the missions' use of the excellent natural pastures. Ex-soldiers often acquired livestock and needed ample room for it.¹ If one had no stock, however, he could borrow enough for a start and within a few years pay back the debt from the increase. To become a ranchero made one a member of the landed gentry and gave him standing in the community. Though they spent long hours in the saddle, their work was not arduous and they liked the freedom of their outdoor life. Labor presented no problem, for they could hire Indian herders skilled with the reata for little more than their food, saddle, and bridle. No fences were needed because roaming stock could be separated from those of neighboring ranchos at the annual rodéo and tuna hedges sufficed to keep stock from destroying gardens. The mild climate made year-round grazing possible and made barns unnecessary. Although in some years the rains were insufficient to induce good pasture, there was usually enough grass and alfilaria to carry the cattle through the year if surplus horses were rounded up and killed.

Cattle supplied a wide variety of products to the nearly self-sufficient ranchos. Their tough beef, cut into strips and dried in the bright sun, furnished carne seca, the principal food for breakfast, dinner, and supper. Cattle provided the fat used in cooking, the grease for soap and candles, and the rawhide for reatas, reins, chair bottoms, bed springs, and for a variety of repairs. The many uses for the products of the long-legged, small-bodied, wide-horned cattle help account for the pastoral occupation of the rancho period, but the existence of a market for hides and tallow also promoted that distinctive type of land use.

Trade.--The trade in hides, an outgrowth of mission commerce, was of an economic significance to remote and thinly peopled California out of proportion to its actual value. Reports of the vast California herds had reached South America during the Spanish era. In 1813 two Lima ships arrived with cargoes of cloth and other manufactured goods to exchange for such California mission products as hides, tallow, grain, and wine.² Inasmuch as Peru was part of New Spain, the Lima trade was considered legitimate, but ships of British, Russian, and American registry soon engaged

¹Acquiring stock was a preparation for acquiring land, for the government's policy was to grant no land to anyone who had fewer than 100 head of ganado mayor or neat cattle and horses.

²Bancroft, op. cit., XIX, 268.

illicitly in the California trade. Commerce was small and irregular, however, until the sea otter trade beckoned the Boston fur ships and until American whalers began operations off the coast. In 1822 when the new Mexican regime legalized foreign trade, an English firm of Lima established a branch in Monterey, contracting to send at least one vessel annually to Alta California for three years. The ship was to touch at each harbor to take all the hides offered and at least 312 tons of tallow, with payment in money or goods.¹ Throughout the Mexican period, American droghers visited California harbors with manufactured goods to exchange for hides and tallow. The rising boot and shoe industry of New England furnished them with a market for California hides and familiarized certain New England traders with California's resources. The American ships, the province's chief contact with the outside world for nearly three decades, helped stabilize the pastoral occupation which characterized millions of California acres.

Less significant to pastoral occupation than ocean trade was a caravan trade carried on after 1829 between Los Angeles and Santa Fe via the Old Spanish Trail.² From Santa Fe some of this trade moved to Missouri River points over the Santa Fe Trail. China silks sometimes moved over this caravan route, but horses and mules from the Los Angeles Lowland were the chief products involved. As rancheros complained that this trade required horse-stealing, obloquy was cast upon it.

The End of the Mexican Period

The change to American sovereignty in 1848, portentous though it was ultimately to the use of land for grazing, induced no immediate change in the pastoral pattern of the San Gabriel Valley. Skipper, trapper, and settler had advanced American interests through peaceful penetration long before President Polk resolved to acquire California in fulfilling the nation's "manifest destiny." The treaty of Guadalupe Hidalgo of February 2, 1848, which brought California under American control, guaranteed resident Mexicans protection and security in the enjoyment of their liberty, property, and religion. But the transition to American

¹Caughey, op. cit., p. 212.

²This trail crossed the Colorado Plateau north of the Grand Canyon and entered the Los Angeles Lowland from the Great Basin via Cajon Pass (Plate I).



Figure 11.--The Duarte ranch house in 1890, with shingled roof and brick chimneys added after the conquest.

sovereignty and statehood was impeded by the slavery question, confused by uncertain land titles, and made chaotic by gold. Four months before the treaty was signed, gold had been discovered in the foothills of the Sierra Nevada. By the end of 1848, excitement surcharged the atmosphere. Hope of sudden wealth brought a rush of gold-seekers and, even in the relatively calm "cow counties" of southern California, a period of "squatterism" ensued. The dramatic events of the transitional period which were reflected in the sequent occupance of the Rancho Azusa de Duarte will be considered in the next chapter.

CHAPTER III

THE RANCHO AZUSA DE DUARTE IN THE EARLY AMERICAN PERIOD OF CALIFORNIA HISTORY (1848-1872)

During the period from 1848 to 1872 California was transformed from a Mexican cattle frontier to an American commonwealth. At the beginning of this period Los Angeles was the largest town in California, but two years later when statehood was achieved,¹ it had suddenly been dwarfed in population and commercial ascendancy by San Francisco. The Los Angeles Lowland changed slowly by comparison with the dynamic gold country, yet from a pastoral frontier thinly peopled with Spanish-speaking Californians in 1848, it emerged in 1872 as a pioneer farming area with English gradually supplanting Spanish as the prevailing tongue and crops replacing livestock as the dominant economic interest. Most of the ranchos which had dominated its occupancy during the latter half of the Mexican era began early in the American period to disintegrate under the impact of political, economic, and climatic forces. During the quarter-century between the conquest and the enactment in the early seventies of the "no-fence law," occupancy was affected and even directed by such disparate influences as the necessity for confirming land titles, violent dislocations of the price structure, wide deviations from average rainfall, and immigration. Many of the dramatic events of this period which were mirrored in the cultural landscape of the San Gabriel Valley are epitomized in the sequent occupancy of the Rancho Azusa de Duarte.

Land Titles and Occupancy

The Policy of Title Confirmation

Most officials in Washington knew little of remote and

¹So isolated and remote was California that it did not receive news of its admission until six weeks after Congress had voted it a state.

isolated California, and the absence of telegraph and railroad prevented their receiving adequate or timely information about it. Two reports on California land grants were presented in Washington in 1850. One emphasized the problems to which the carelessly defined grants would lead under American law.¹ The second, more complete and detailed, was made by William Carey Jones of the General Land Office, who wrote:

The grants in California, I am bound to say, are mostly perfect titles; that is, the holders possess their property by titles that, under the law which created them, were equivalent to patents from our government; and those which are not perfect--that is, which lack some formality or some evidence of completeness--have the same equity, as those which are perfect, and were and would have been equally respected under the government which has passed away.²

Despite the Jones report and the obligation under the Treaty of Guadalupe Hidalgo to confirm titles to lands held, Congress in March, 1851, passed a bill establishing a Board of Land Commissioners to investigate the validity of all Spanish and Mexican land grants in California.³ The resultant policy placed the burden of proof upon grant holders, requiring them within two years to appear before the commission to petition for their land or forfeit it. The policy involved all grantees in court action, kept their cases in litigation for years, piled up expenses which cost them the bulk of their land, stimulated the initiation of spurious claims, and for years hampered the economic progress of California through insecurity in land titles. In December, 1854, the Los Angeles newspaper, Southern Californian, thus described the confusion created by the title policy:

The claimant had no sooner been assured of the rights in his lands by a confirmation before the Land Commission, than the government by the Attorney General, informs him of its determination to take an appeal on all cases that have been decided against it by the Commission--the appeal is taken to the

¹Lieutenant Henry W. Halleck, Report on the Laws and Regulations Relative to Grants and Sales of Public Lands in California, House Ex. Doc. No. 17, 31st Congress, 1st Session.

²William Carey Jones, Report on the Subject of Land Titles in California, Senate Doc. No. 18, 31st Congress, 2d Session, III, 18.

³The Board of Land Commissioners examined 813 claims and confirmed 591. Of those confirmed, 450 were appealed by the U. S. and adjudicated by district courts. Ninety-nine cases were appealed by the U. S. to the Supreme Court. Claims were complicated because haphazard surveys, indefinite boundaries, lost or defective documents, and unfulfilled conditions made titles to some grants imperfect even under Mexican law. (Bancroft, op. cit., XXIII, 529-581.

District Court, and now has to be tried de novo--setting aside all that has been done by the Commission, and compelling the unfortunate claimant to again undergo the ordeal of another expense in employing lawyers to carry his titles through the District and Supreme Courts, before he is sure of a patent to his property.¹

Confirmation of Title to the Rancho Azusa de Duarte

Andrés Duarte petitioned for confirmation of title to his rancho in October, 1852, submitting proofs of title and a diseño of his grant.² His claim was upheld by the commission, which ruled that his residence upon the rancho was proof of his occupying it and that he had proved substantial compliance with the conditions under which the grant had been made.³ On order of the commission, his land was surveyed and a plat of it made by Henry Hancock, deputy surveyor. This plat (Fig. 12), completed in September, 1858, officially established the boundaries of the rancho.⁴

¹In February, 1855, the Southern Californian complained: "The present law under which titles are adjudicated in this State, is a monster of inequity, originated in an unholy covetousness, and carried out in a spirit befitting its origin--riding roughshod over sacred treaty, and outraging every principle of right." Historians generally agree that the claims were badly handled. Bancroft wrote of the land policy, "It was thoroughly bad in almost every respect, and merits only condemnation." (Op. cit., XXIII, 565.)

²Andrés Duarte--illiterate, Spanish-speaking, and a stranger to American legal procedure--had to defend his rights in proceedings he could not understand. He was one of the rancheros whose cases were heard in Los Angeles. Some had traveled 500 miles to San Francisco to defend their titles, taking witnesses and documents with them. Delays, crafty lawyers, high fees, and the cost of staying in the gold-mad city consumed much of their substance. The Los Angeles Star on February 28, 1852, reported that such inconvenience and expense had led rancheros representing grants covering nearly 1,000,000 acres to meet in Los Angeles to urge the commission to transfer some sittings to the South. Their spokesmen estimated that a third of the land of Los Angeles County would be forfeited if owners were forced to validate their titles in San Francisco, declaring that the impossibility of producing witnesses and documents at so great a distance would result in the loss of "many just and ancient claims." Their case was presented to influential persons in Washington and the commission was induced to hold a brief session in Los Angeles, but thereafter declined to leave San Francisco.

³California Land Claims, op. cit.

⁴This survey left the Indian spring which had influenced the location of the rancheria of Asuksa and of the ranch house outside the rancho. The collapsed spring is now 20 feet north of the rancho boundary.



H. G. Rollins,
U. S. Surv. Gen. Col.

J.W. Mandeville
U.S. Surveyor Genl for Cal.



A hand-drawn map showing a section of land. At the top left, the word "MOUNTAIN" is written. A river, labeled "Gabriel River", flows from the top right towards the bottom left. Several points along the river are marked with dots and labeled: "Pleasant House", "Sage Hen Ranch", "Blossed Springs", and "Ranch of Paul & Mary". A diagonal line crosses the lower portion of the map, labeled "AZUSA RANCHO de HENRY DALTON". To the left of this line, there is a small rectangular area labeled "Dry" and another area labeled "Public Land". At the bottom left, the words "PUBLIC LAND" are written diagonally. On the right side, near the river, there is a cluster of small circles representing trees or bushes. The map also includes some numbers like "37." and "R.W."

E.
C.M.P.

PLAT
of THE
AZUSA RANCHO
FINALLY CONFIRMED TO
ANDREAS DUARTE
Surveyed under the Indulgent of the
U.S. SURVEYOR GENERAL
by
Henry Hancock Dep. Surv.
Feb. 4th. 1850
Containing 693.88 Ac.
Scale 40 Chs to 1 inch
Mar. 1856

FIELD NOTES		
N ^o	Course	Distance
1	S 15° E	364
2	" "	890
3	E 65° S	865.2
4	" 75° S	119.00
5	N 75° S	11.00
6	E 60° S	45.00
7	S 30° S	4610
8	S 6° W	8760
9	" 89°	118.40
10	" 50° S	10.50
11	" 42°	7.00
12	South	40.00
13	West	60.00
14	South	80.00
15	West	65.00
16	N 67° W	190.00
17	E 26° E	246.25
		1185.81
14 mls 60cms. 61 kls		

DEPARTMENT OF THE ARMY
Washington, D. C.
I hereby certify
of the plat of map
to which it relates.



Meantime a notice of appeal from the verdict of the commission was filed by the Attorney General in December, 1854. He contended that the commission's decree was erroneous on grounds that Governor Alvarado's grant to Duarte violated Mexico's colonizing law of 1824 since the land was within ten leagues of the coast. He contended further that the land was mission land which could not be colonized, and that the description of the grant was indefinite and not according to the diseño. He argued that there was no evidence that Duarte had built and occupied a house within one year or that he had cultivated land. When the case was tried in February, 1855, a witness who had helped with the original survey in 1841 testified that the Rancho Azusa de Duarte was fourteen leagues from the seacoast, poco mas ò menos. He gave clues to the rancho's occupancy when he testified:

Andres Duarte took possession of the land in 1841 and has resided upon it up to this time, having built thereon houses and corrals, and cultivated a portion thereof, having also horses and cattle upon the same, and also residing there with his family. Before the concession he constructed a temporary brush structure thereon, and immediately after the concession he built a house, residing therein with his family, remaining there with his family up to the present time.¹

The District Court sitting in Monterey upheld the decision of the commission, whereupon the Attorney General appealed to the Supreme Court, which dismissed the case. A patent signed by President Rutherford B. Hayes on June 7, 1878, finally completed the official confirmation of Duarte's title. Thus thirty years elapsed after the signing of the treaty of Guadalupe Hidalgo in 1848 before title to the Rancho Azusa de Duarte was entirely valid. In the meantime Duarte had lost his land.²

Litigation and inflation affected the ownership and use of the Rancho Azusa de Duarte and many other ranchos. The easy-going rancheros, accustomed to an openhanded credit system and unfamiliar with cancerous compound interest, fell easy prey to

¹California Land Claims, op. cit.

²Californians liked horses and horse racing. The influence on occupancy of gambling on races obviously cannot be evaluated, but an item in the Southern Californian of May 9, 1855, suggests possible connections: "A great race came off at the Mission on Saturday last, between the horses of Don José Sepulveda and Senor Duarte. Distance four miles for four hundred dollars and one hundred head of cattle. The heat was made in nine minutes by Duarte's nag, beating the other horse by one hundred and fifty yards. As usual in races of this description . . . some dispute arose and the tendering of the stakes is refused."

the questionable financial practices of the gold-rush era. Money was scarce when on September 1, 1854, Andrés Duarte and his wife borrowed eight hundred dollars,¹ promising to return the money in five months and mortgaging their rancho for about twelve cents per acre to secure the loan.² Despite interest of six per cent per month, Duarte paid off this loan, but he had been hard-pressed to defend his property in the courts.

Reasons for Title Confusion

A basic reason for the delays in confirming titles lay in the size of the grants. The experience of Americans, limited to humid lands, made them incapable of understanding that the ranchos were not too large for cattle-raising in a semiarid land of uncertain rainfall. Furthermore, like the Azusa de Duarte, most ranchos were vague as to boundaries and some, made on the eve of conquest, were open to question. Then, too, confirmation of titles would leave little of the best land for Americans, some of whom expected "manifest destiny" to further individual as well as national advantages. Many argued that it was unjust for Californians, recent citizens of an enemy country, to handicap a new American commonwealth with their feudal rancho system. The intruding tide of victorious Americans, swollen by the gold rush, increased the demand for land. Squatters settled on many ranchos, honestly believing that they were settling on public land to which they would ultimately secure valid title.

¹On December 28, 1854, the Southern Californian noted: "The want of money appears to be felt by all classes. . . . The scarcity of money is seen in the present exorbitant interest which it commands, 8, 10, and even 15 per cent. a month, is freely paid, and the supply is too meagre to meet the demand." The currency shortage was still acute in July, 1855, when the Los Angeles Star published this notice: "Corn, wheat, flour, wood, butter, eggs, etc., will be taken on old subscriptions."

²The Duartes agreed to repay the loan, "together with interest thereon at the rate of six per cent per month from this date, and if the interest on this note is not paid punctually at the end of each and every month, it shall immediately become a part of the principal and thereafter bear the same interest as the principal debt." (Records of Los Angeles County, Deeds and Mortgages, Book 2.) This money was borrowed from Joseph A. Rowe, a circus man who later bought for \$33,000 the Rancho Santa Anita which Hugo Reid had sold in 1847 for "a just price" of \$2,700. Had his plans not failed, Rowe would have used the Santa Anita for winter quarters for his animals. (W. W. Robinson, Ranchos Become Cities [Pasadena, 1939], p. 191.) No evidence exists as to how he would have used the Duarte rancho had the note not been paid.

Under these conditions, agricultural advancement was slow; needed improvements, such as irrigation works, could not be undertaken on a large scale; and worst of all, the land passed into the hands of speculators whose wealth enabled them to defend their holdings before the law and to keep them intact until increasing population enhanced values.¹

The Los Angeles Lowland at the Dawn of the
Early American Period

More people live on the Rancho Azusa de Duarte today than lived in the entire Los Angeles Lowland a century ago. Then details of soldiers guarding the major passes and the San Pedro-Wilmington harbor area were reminders of the recency of war. Except the pueblo of Los Angeles and the mission settlement at San Gabriel, there were no towns in the entire area. In 1850 there were only 3,530 people in the newly organized Los Angeles County, although the county included, in addition to its present area, all of the present San Bernardino and Orange Counties, the north part of Riverside County, and the southern half of Kern County. Of the 3,530 people, 2,319 were native Californians.² In the vast county there were only 518 buildings, 274 of which were in the pueblo.³ There were only 2,648 acres of "improved" land and livestock was considered twice as valuable as the land over which it roamed.⁴ Although the value of land owned by individuals ranged from 100 to 80,000 dollars, most properties were valued between 1,000 and 2,499 dollars.⁵ The Rancho Azusa de Duarte, valued at 1,500 dollars in 1850,⁶ was thus a representative rancho in value.

Business was conducted in the leisurely fashion of Mexican days. Los Angeles received water through an open zanja from the Los Angeles River, collecting impurities on its way through the pueblo. There were no banks, and most of the small change carried in buckskin bags was of foreign origin. Merchants, most of whose business was with rancheros, closed their shops during the slack siesta hours. There was no public or private school in the county,

¹Robert Glass Cleland, A History of California: the American Period (New York, 1922), p. 412.

²Maurice H. Newmark and Marco R. Newmark, Census of the City and County of Los Angeles for the Year 1850 (Los Angeles, 1929), p. 115

³Ibid.

⁴U. S. Census Office, Seventh Census: 1850 (Washington, 1853), pp. 976-977.

⁵Newmark and Newmark, op. cit., p. 117. Ibid., p. 92.

nor any college, hospital, library, or Protestant church.¹ The mission churches of San Gabriel and San Fernando and the Catholic church adjacent to the Los Angeles plaza ministered to the religious needs of the population. Gradually more public service features appeared in the landscape, but in 1850 there was still no school or church on the Duarte rancho. Immigrant wagons were arriving with increasing frequency, but travel within the county was still chiefly by horseback or carreta. Little steamers and sailing ships plied intermittently between San Pedro and San Francisco, but postal service was less dependable than before the conquest when couriers carried the mail. Remoteness and isolation prevailed at the dawn of the early American period.

Extraneous Influences on Occupance

The Impact of Gold

The dramatic gold rush which suddenly shifted the American frontier from the Mississippi Valley to the Pacific, revolutionized many California landscapes. It enormously accentuated the post-war inflation of the early fifties and created a sudden demand for beef to feed miners and immigrants. From the coming of the hide droghers to the gold rush, two to four dollars for a steer had been the usual rate of exchange,² but the Argonauts upset all standards of value, abruptly shifting the rancheros' marketable product from hides to meat. Great drives were organized and cattle grazed their way to northern markets. Steers were regularly quoted as high as 75 dollars in San Francisco, and even on the southern ranges brought from 20 to 40 dollars.³ Fantastic prices stimulated prodigal spending and hastened the financial ruin of the easy-going paisanos. Soon the high prices for cattle induced competition, and droves of cattle and sheep appeared in the northern markets from Sonora, Chihuahua, New Mexico, Texas, and even from the Missouri Valley. Table 4 suggests the various directions from which competing cattle came.

¹Seventh Census, op. cit., pp. 973-980.

²J. M. Guinn, "The Passing of the Cattle Barons of California," Historical Society of Southern California Annual Publications, VIII (1909-1910), 53.

³Cleland, The Cattle on a Thousand Hills, op. cit., p. 117.

TABLE 4

CATTLE DRIVEN INTO CALIFORNIA IN 1854^a

Route	Number
Noble's Pass	24,020
Beckwith's Pass.	10,151
Gila Route	9,075
Sonora Pass.	5,106
Carson River Route	<u>12,910</u>
Total.	61,262

^aSource: Governor Bigler's message to the State Legislature, quoted in the Los Angeles Star, January 18, 1955.

Competition helped throw the cattle industry into a panic, but the slump was not the outcome solely of inter-regional competition, for several successive rainy winters had resulted in such abundant pasturage that the herds in California's "cow counties" had multiplied rapidly. Values fell sharply in 1855 until prime cattle brought but 25 per cent of their value in the preceding year. Within two years, however, quotations again climbed and pastoral occupance continued to distinguish the San Gabriel Valley for a few more years. Nevertheless, by 1856 the golden age of the rancheros was over. While the gold fever made cattle-raising profitable, the cattle barons had been in no haste to divide their ranchos, and potential purchasers, moreover, hesitated "buying law suits" while title confirmation was pending.

Weather and Occupance

Adverse weather speeded the break-up of the ranchos which the gold rush temporarily retarded and title trouble confused. A severe drought in 1856 followed the low prices of the preceding year, causing an estimated loss of a third of the cattle in Los Angeles County.¹ But this severe loss was trifling compared with losses inflicted by dry years in the early sixties. The season of 1860-1861 was so dry that many cattle died for lack of grass and water. Anxious to realize as much as they could, rancheros glutted the northern markets with bony animals. This drought, which left surviving animals emaciated, was followed in the

¹John S. Hittell, Resources of California (San Francisco, 1863), p. 284.

winter of 1861-1862 by one of the most prolonged rains in the history of the Los Angeles Lowland, continuing almost without interruption for a month. The resulting floods drowned hundreds of cattle on the lower lands, but during the next two years there was such abundant pasturage that drought and flood losses were almost wiped out. With a rising supply of fat cattle, however, prices again declined, and the rancheros, in an attempt to make up in quantity for decreasing unit values, overstocked their pastures. Then came "the great drought."

In the winter of 1862-1863 skies were cloudless for months and grass failed to sprout from the famished earth. On many ranchos, the starving cattle were slaughtered for their hides, horns, and bones. The winter of 1864-1865 was another season of famine, without even a shower until March.¹ This protracted drought ended grazing as the distinctive type of land use throughout the Los Angeles Lowland, for thereafter grazing was subordinate to crops in the land-use pattern. An epidemic of smallpox during the dry years took heavy toll from the Indian population, reducing the labor force. Range land fell so low in value because of the drought that it was assessed at ten cents per acre, the valuation placed on each grape vine, and cattle were assessed at but one dollar per head. Many rancheros were in debt when the great drought began and all had mortgaged their lands by the time it was over. Andrés Duarte borrowed money in 1859, mortgaging his rancho as security for the loan, but he lost his property before the onset of the great drought.

Taxes and Occupance

Under Mexico, there had been no assessment of real or personal property, as the tariff on imports and the tax on pleasures and vices paid the limited cost of governing. Under American rule, although vices multiplied, the revenue derived from fines and from licenses for saloons and gambling fell short of paying the cost of governing, and land taxes were established.² The average assessed

¹As there were no weather stations, the dryness of the famine years can only be inferred. Anaheim, an irrigation colony, was invaded by so many starving cattle that guards were posted outside its willow hedges to protect the crops. (Harris Newmark, Sixty Years in California [New York, 1930], p. 328.)

²J. M. Guinn, A History of California and an Extended History of the Southern Coast Counties (Los Angeles, 1907), pp. 293-295.

value of land in 1850 was only 50 cents per acre, hence taxes were relatively low, but in years when there was nothing to sell, even low taxes could not be paid. After a few years, the assessed value of land was cut to 25 cents per acre, which remained the standard assessment until 1863, the first year of the unparalleled drought. Then the assessment was cut to $12\frac{1}{2}$ cents per acre, and in 1864 it was cut to 10 cents.¹ Even with such low assessments, non-payment of taxes was general. The complicated tax issues involved relations between the aggressive northern counties and the southern "cow counties." Southerners contended that their lands contributed an undue amount to the support of the state, but that their small population gave them no voice in state affairs. Tax problems were further complicated by an acute shortage of money. Mexican coinage was most frequently used, but there was no common medium of exchange with which to pay taxes. The great drought and general tax delinquency contributed to the post-war boom of the late sixties. Unable to pay his taxes of 4,000 dollars on 200,000 acres of pasture and vineyard lands, Abel Stearns, the county's leading merchant and landowner, advertised his ranchos for sale. With other landowners also forced to liquidate their assets and with every ship bringing in prospective buyers, a post-war land boom developed.

Indian Raids and Occupance

Indian raids added to the troubles of the fifties and early sixties.² Bands of Paiutes stole horses from the ranchos of the San Gabriel Piedmont, driving the animals into the mountains or the desert to be killed and eaten. Mojaves from the Owens Valley

¹When the assessed value of land was 25 cents per acre, that of each grapevine was 10 cents. When land assessment was cut to 10 cents per acre, grapevines--unaffected by the drought--were raised to 20 cents each. Nevertheless, the general property tax brought the county treasury scarcely \$22,000 and the state tax on Los Angeles County property yielded under \$9,500. (Cleland, op. cit., p. 181.)

²On February 1, 1855, the Southern Californian reported: "We learn that our valley is once more infested by hostile savages from that nest of horse thieves, Owen's Lake; parties of them are known to be lurking about, awaiting an opportunity to run off stock. It is now about eight months since the last extensive foray made by these rascals, during which time our rancheros have enjoyed unprecedented freedom and security from their depredations. . . . It is a matter of regret that the Agency at Tejon should have become inadequate for protecting the property of our ranchers."

and other Indians joined in the stealing of cattle and horses.¹ Early in 1865 Andres Duarte, who was still living on his former rancho, reported the loss of fifty horses, and a caballada was reported driven from a nearby rancho.² With the rise of reservations in the Southwest, such Indian raids declined. For a few years, however, they were so frequent and so numerous that the rancheros organized punitive expeditions against the loathed, hungry, frustrated Indians in order to protect the depleted herds left by the dry years.

Break-up of the Rancho Azusa de Duarte

Land Sales in "Lower Duarte"

In December of the panic year of 1855, Andres Duarte, for a consideration of 200 dollars, sold one hundred fertile acres in the southwest of his rancho to Michael Whistler. He and his wife deeded Whistler the land, "together with the right of taking water through our rancho undisturbed forever," a provision basic to much subsequent occupance. On the same day they deeded to each of two other purchasers fifty acres adjoining Whistler's for the same consideration of two dollars per acre, "with water privileges in common with Michael Whistler." One of these tracts was of a peculiar diamond shape which still affects property lines and occupance (Fig. 16). In May, 1856, Duarte sold twenty-five acres adjacent to Whistler's for 100 dollars, with the privilege of taking water through his zanjas, in common with Michael Whistler.³ From the four recorded sales,⁴ Duarte realized 500 dollars and gave in

¹In 1862 a marauding band of Mojaves and Paiutes, armed only with bows and arrows, killed a man on the Rancho San Pasqual, the present site of most of the city of Pasadena. (Robert Glass Cleland, From Wilderness to Empire [New York, 1944], p. 287.)

²Los Angeles Semiweekly News, February 7, 1865. Every rancho had its caballada or riding animals and a larger herd of unbroken horses.

³Los Angeles County Records (Hall of Records, Los Angeles), Deed Book 3.

⁴References in the first four deeds to certain corners suggests that some of the land Duarte conveyed in the fifties may have been used earlier by other parties, though not formally deeded. There were squatters during this decade on the adjoining Ranchos Azusa de Dalton and San Francisquito, and it is possible that there were squatters on the Rancho Azusa de Duarte of whom there are no records.

perpetuity the right to convey water across the remainder of his land. Within a few months, Whistler bought the land purchased by others. On January 10, 1861, he conveyed all his land to Dr. Nehemiah Beardslee who appears to have lived on the Duarte rancho some months before Whistler's deed to him was recorded. Beardslee had come by ox-drawn covered wagon from Texas,¹ bringing with him his large family, Indian retainers, seeds for crops, and young fruit trees. He paid 1,250 dollars for his land, the major part of which is a rectangle still known as the Beardslee Tract. This tract (Plate III)--now bounded by California Avenue on the west, Mountain Avenue on the east, Euclid Avenue on the north, and Shrode Avenue on the south--has been an important land unit for nearly ninety years. Whistler's deed to Beardslee specifically conveyed "all the water rights, privileges and easements created or sold by said Duarte" in his deeds to purchasers of his land. This provision was to give rise to the Beardslee Water Ditch Company and to be vitally significant to evolving occupance south of Duarte Road.

The deed delivered to Dr. Beardslee suggests that the San Gabriel Valley in 1861 was open land of low value. The legal description of the property was based in part upon the San Bernardino Base Line and San Bernardino Meridian as co-ordinates, but bearings were taken from conspicuous landmarks, none of which exist today except the east window of the San Gabriel mission church. The mission, though seven miles away, was visible when atmospheric conditions were favorable, for as yet few trees, no buildings, and no smog lay between it and the Beardslee Tract to break the view. The road from Azusa² to the mission was also mentioned in the description of the property, and bearings were taken from it. Though not yet deeded or surveyed, this narrow trail--dusty or muddy according to the season--was important for connecting the Beardslee farmstead with the outside world.

Sales of the Rancho

The sales of land did not save Andres Duarte from financial difficulties, and in 1859 he mortgaged his remaining land to

¹Many immigrants who came to the Los Angeles Lowland in the decades preceding and following the Civil War came overland from Texas, driving their stock via the Gila River Route. Texas cattle improved the quality of California stock.

²By the sixties the Rancho Azusa de Dalton was coming to be known as the Azusa rancho and the Azusa de Duarte as the Duarte rancho.

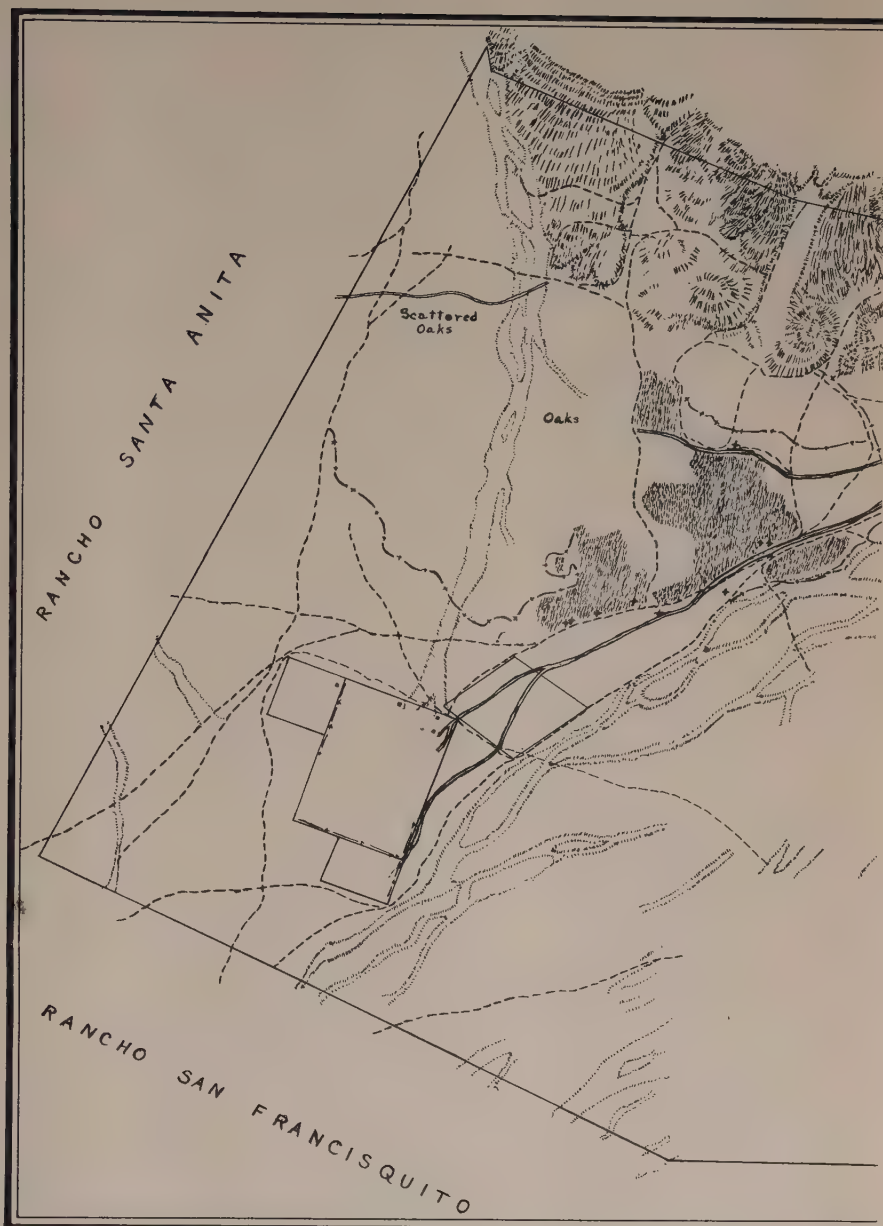
William Wolfskill, a former trapper. Expenses of title confirmation, improvidence, and his lack of understanding of a commercial economy made paying the interest and principal of his mortgage note impossible for Duarte, and he lost his land on the eve of the great drought. In December, 1861, the court ordered his rancho, excepting portions previously conveyed, to be sold unless redeemed. The land was not redeemed, and on July 29, 1862, was sold by the sheriff. Wolfskill's bid of 4,000 dollars was the highest, and he became owner of 6370.62 acres of the Rancho Azusa de Duarte.¹ At about the same time he acquired the adjoining Rancho Santa Anita, but perhaps because of the great drought, he made no significant changes in the occupancy of the upper San Gabriel Valley. In 1868 his son and heir sold the Duarte rancho to Alexander Weill, an international banker, through Eugene Meyer, the latter's agent in Los Angeles. Soon thereafter major occupancy changes were under way.

Occupancy of the Duarte Rancho in 1860

A map of the Duarte rancho made in 1860 gives clues to changes in land use which followed the early sales of portions of the rancho. This map pictures the areas which had been sold and divides the remainder of the interior into 130 forty-acre tracts and the marginal portions into 45 plots of various size. Occupancy features on this faded manuscript map--made from a survey by Max Strobel at the request of Eugene Meyer--are reproduced as Figure 13. These features include the Duarte ranch house and several houses on the Beardslee land. Symbols near the main water ditches identify the location of iacaes or Indian shacks. By 1860 a pattern of irrigation ditches had been established in which the Beardslee ditch branched from the one Duarte had dug to divert water from the river to his home and cultivated land.² This rudimentary pattern of water distribution is strikingly similar to that

¹ There is no record in the county files of Duarte's mortgage to Wolfskill, although the mortgage sale to him is of record. Wolfskill, a former "mountain man," was the first commercial grower and shipper of California grapes and oranges. His orange orchard was on land now used for the Southern Pacific's Los Angeles railway yards.

² A notation on Strobel's map says that main ditches were to be allowed 16½ feet along roads and distributing ditches 8 feet. There would not have been enough water for the many ditches he envisaged, nor could it have been forced up all the roads he planned.



FIGURE



THE RANCHO AZUSA DE DUARTE IN 1860

LEGEND

- Road -----
- Ditch -----
- Line of Brush ----- + +
- Cultivated Land -----
- House ----- ■
- Indian Jacale ----- +

SCALE
0 1 2
0 4 2
mi.

formed by the present pipe lines of the Beardslee Water Ditch Company which branch from the joint main of that company and the Duarte Mutual Irrigation and Canal Company in the northeast of the rancho (Fig. 7). The soil cultivated in 1860 lay in the interior of the rancho close to the ditches. It was soil of the Hanford series (Fig. 6), free from boulders and of gentle gradient (Fig. 4). Many of the oaks which formerly dotted the land had been removed to make room for crops and to provide firewood, but the map notations, "Oak" and "Scattered Oaks," suggest that in the untilled portions of the rancho enough of these spreading trees remained to form a park landscape.

Oxen pulled the primitive farm implements used to till the irregularly shaped fields which, judging from the scarcity of distributing ditches, were used chiefly for unirrigated winter crops. Barley for hay, the principal winter crop, was seeded in alternate years. Land planted to barley was plowed six inches deep after the first heavy rain and about one and a half bushels of seed per acre were broadcast and harrowed in. The next year a volunteer crop was allowed to grow. Wheat was grown with similar methods. There were objections to wheat, however, because there were few flour mills to buy it¹ and because it was subject to rust. Ditch water was turned on some of the irrigable land to permit the growing of corn, the favored summer crop.² Elsewhere in the Los Angeles Lowland, farmers were experimenting to discover crops which could be sold locally or endure the cost and time of transportation by ship or caravan to distant places. Sugar cane, cotton, and tobacco were grown in the fifties and sixties, but there are no records of their having been tried on the Duarte rancho. Commercial horticulture was as yet of no significance, but its faint beginnings were visible. There were mature fruit trees and a little vineyard around the Duarte homestead, and Dr. Beardslee had set out a mixed orchard. Besides two seedling orange trees--the first orange trees on the rancho--the Beardslee orchard contained apple, peach, and walnut trees.³

¹Henry Dalton of the adjoining Azusa rancho built a flour mill in 1855 and advertised that he would rent land near it for raising wheat.

²In 1855 the Los Angeles Star boasted, "Our corn towers eighteen feet high and bears 80 to 100 bushels per acre."

³"This orchard became famous, as it was the only one in this part of the San Gabriel Valley. Women came from El Monte and

Strobel's manuscript map shows four proposed east-west roads and nine proposed north-south ones, as well as the actual roads shown in Figure 13, which were curving bridle paths. The principal existing road crossed the rancho diagonally from southwest to northeast to focus on the river-crossing east of the homestead. From the river, this road, the ancestor of the Foothill Boulevard, led eastward across the piedmont. Some of the roads that skirted the Beardslee Tract joined this principal road. Southwestward this road and its feeders led to the Mission Road and San Gabriel where settlers called for mail on their way to Los Angeles to do their shopping.¹ From the Mission Road south of Duarte, which corresponds with today's Arrow Highway (Plate III), a road branched off to El Monte and the little settlement of Savanna a mile west of it. The road north of "the diamond" developed into Duarte Road which is currently planned as a freeway. Some of the trails of 1860 led to mines in the little canyons above the rancho or toward San Gabriel Canyon where bonanza mining was in progress. The trails into the canyons led also to bee ranches where bees, but recently introduced from Europe, transformed the nectar of sagebrush into honey, a marketable and portable product of high value.

Remoteness and Isolation in the Early American Period

Settlements and Their Nature

Many facets of California's sequent occupance have been colored by the inherent isolation of the state, but perhaps no part of it was more affected during the early American period by natural remoteness and inaccessibility than the Los Angeles Lowland. Ranchos and tiny settlements were isolated from each other by distance, poor roads, and the absence of public transportation.

Savanna to dry fruit, staying at the Beardslee place while doing so and paying nothing for the fruit. Such was the Beardslee hospitality." (Emmett B. Norman and Viola Shrode Norman, "History of Duarte," in History of Monrovia and Duarte, Chas. F. Davis, Ed. [Monrovia, 1938], pp. 99-100.)

¹The Southern Californian reported on November 23, 1854: "The Grand Jury noticed the vile state of the road coming into this city from the east. . . . In view of the immense travel on this road, it is a wonder that it has been allowed to remain in its present plight so long." The Mission Road is still an important road leading into Los Angeles from the east.

In 1850 San Bernardino was founded on former mission land as a Mormon colony, an outpost of the commonwealth of Utah. In 1851 immigrants from Texas settled on subirrigated land at El Monte and the next year fifty more families arrived by covered wagons to enlarge that community. Except an Indian village at El Misión Viejo and a tiny hamlet at Cucamonga, El Monte was the only settlement of note between San Gabriel and San Bernardino. The main road from Los Angeles to San Bernardino, now identified as the Valley Boulevard, passed through El Monte. Table 5 lists the nine settlements of Los Angeles County in 1860. Los Angeles was then a town of 4,385, but these settlements were rural communities. The squatter settlement of "Lower Azusa" gave the Rancho Azusa de Dalton a population of 363, but the Rancho Azusa de Duarte had too few people to be listed by the census as a settlement.

TABLE 5
SETTLEMENTS OF LOS ANGELES COUNTY IN 1860^a

Name	Population
Assuza (Azusa)	363
Elmonte (El Monte)	1,004
Los Nietos	605
San José	463
San Gabriel.	586
Santa Anna (Santa Ana ^b).	756
San Juan (San Juan Capistrano ^b).	661
San Pedro.	359
Tejon ^c	920

^aSource: U. S. Census Office, Eighth Census, Population (Washington, 1864), p. 29.

^bNow in Orange County.

^cNow in Kern County.

Transportation and Communication

The extra-regional contacts of the Los Angeles Lowland were too few to mitigate isolation significantly. Clipper ships reduced the time between the Atlantic coast and San Francisco, but the Los Angeles Lowland lay five hundred miles from that major port. Sailing ships or little steamers carried the mail from

Panama to San Francisco, whence it was often months in reaching Los Angeles. Camel caravans were introduced in 1858 to carry mail and military provisions between Los Angeles and Fort Tejón, but the Civil War and the promised Pacific railroad shortened the experiment with them. In 1858 the government awarded a six-year contract to the Butterfield Overland Mail Company to carry mail from St. Louis to California via Yuma and Los Angeles. The Butterfield service somewhat alleviated the isolation of the Los Angeles region for a few years,¹ but during the early phase of the Civil War, Confederates captured much of the company's equipment. Thereafter, stages followed the route through Salt Lake City to San Francisco, leaving the Los Angeles area unconnected with other states by a dependable transportation connection. The short but picturesque period of the Pony Express yielded little benefit to the southern part of the state, though it speeded communication from the Missouri River to San Francisco. A telegraph line connecting Los Angeles with San Francisco was completed in 1860, but it was almost constantly out of repair. The Adams Express Company served Los Angeles in the first years of the American period, but it succumbed in the panic of 1855. By 1870 the Western Union had taken over most of the western telegraph lines and service was extended and co-ordinated.

Remoteness as Revealed by Manufacturing

The number and character of the manufacturing establishments of Los Angeles County in 1860 (Table 6) suggests the county's isolation, remoteness, and relative self-sufficiency. Most manufacturing plants made goods for the restricted local market. The monetary significance of saddlery and harness, carriages, wagons and carts emphasizes not only the importance of horses in the local economy, but also the inaccessibility from the great wagon and carriage factories of the lower Great Lakes region.

¹The retiring editor of the Los Angeles Star wrote in his valedictory on July 30, 1853: "The sources of public news are sometimes cut off for three or four weeks, and very frequently two weeks. San Francisco, the nearest place where a newspaper is printed, is more than five hundred miles distant, and the mail between that city and Los Angeles takes an uncertain course, sometimes by sea and sometimes by land, occupying in its transmission from two to six weeks, and in one instance, fifty-two days." After the coming of the Butterfield stages the new editor boasted, "The arrival of the overland mail is as regular as the index on the clock points to the hour; as true to time as the dial is to the sun."

TABLE 6

MANUFACTURING ESTABLISHMENTS OF LOS ANGELES COUNTY, 1860^a

Kind	Number	Capital Invested	Cost of Raw Materials	Number of Persons Employed	Annual Labor Cost	Annual Value of Products
Blacksmithing.....	1	\$ 200	\$ 850	2	\$ 1,248	\$ 3,000
Bread.....	6	3,300	24,700	13	10,500	42,430
Brick.....	2	3,000	2,000	16	7,680	10,400
Brooms.....	1	500	500	1	600	1,500
Carriages.....	1	8,000	16,400	12	13,200	37,000
Flour and meal.....	6	58,000	79,500	11	11,340	149,450
Furniture, cabinets....	1	10,000	17,500	10	9,600	50,000
Gold mining.....	8	16,630	.....	50	12,900	14,000
Iron castings.....	1	5,500	6,300	8	9,600	17,500
Leather.....	1	2,000	4,850	3	2,880	12,800
Liquors, malt.....	3	5,000	6,870	8	5,760	17,800
Mineral water.....	1	1,500	388	2	1,500	1,920
Oil refining.....	1	40,000	2,100	2	2,400	29,000
Saddlery, harness.....	4	10,000	15,000	14	12,240	28,000
Soap.....	1	5,000	6,100	2	1,200	7,600
Tin, copper, sheet-iron, wire.....	2	3,600	4,400	3	3,600	10,000
Wagons, carts, etc.	2	4,700	8,330	6	7,820	21,400
Wine.....	8	140,000	43,830	29	18,120	128,050
Total for County...	50	316,930	239,668	190	132,188	582,250
Total for State....	8,468	\$22,943,096	\$27,051,674	49,226	\$28,402,287	\$68,253,228

^aCompiled from statistics of the Eighth Census, Manufactures 1860, pp. 25 and 34.^bAll persons employed in manufacturing in Los Angeles County were men. The total of those employed in manufacturing in the state included 55 women.

Wine, the principal manufactured product sent out of the area, had the requisite high value and keeping qualities to permit shipping barrels of it to San Francisco or around the Horn. No figures of the vineyard acreage of the early American period are available, but the value of grapes bought by the wineries, the number of persons they employed, and their relatively large capital investment suggest the significance of viticulture in the landscape. Gold mining, an activity listed with manufacturing in Table 6, was carried on chiefly in San Gabriel Canyon, but miners were busy prospecting the smaller canyons above the Ranchos Santa Anita, Azusa de Duarte, and Azusa de Dalton. More men were engaged in this speculative activity than in any of the processing industries. Gold, like wine, could be sent long distances from this remote area.

Coinage

Isolation was evidenced in the early American period by difficulties over currency and coinage. When the depreciated notes the federal government had declared legal tender appeared, their use was declared contrary to the state constitution, which recognized only metallic currency. As all contracts were entered into on a specie basis, the question--vital to land use--arose as to whether the depreciated notes were receivable at par in the payment of taxes. The state Supreme Court ruled that the state was under no obligation to accept greenbacks.¹ To protect themselves against loss, the commission men who sold the few surplus agricultural products of Los Angeles County adopted the practice of inserting in every contract a clause providing for payment in gold coin. Contracts for the sale of Duarte land likewise specified that payment should be only in lawful gold coin.

Isolation and the Civil War

The entire population of California south of the Tehachapi Pass was not more than 12,500 during the Civil War years, and of this number three-fourths were Southerners with strong sympathy for the Confederacy. Union troops were stationed at San Bernardino throughout the war because of that town's favorable situation for controlling the passes connecting the Los Angeles Lowland with the

¹Joseph Ellison, California and the Nation (Berkeley, 1927) pp. 203-230.

Mojave and Colorado Deserts (Plate I), and also because of local anti-Union sentiments. El Monte, the principal settlement between San Bernardino and Los Angeles, was considered another danger spot because of its position, productivity, and the sentiments of its settlers. The troops stationed there intermittently during the war were the evidence nearest the Rancho Azusa de Duarte that a war was in progress.

Despite its isolation from the major theatres of war and its inactivity militarily, California helped preserve the Union through its wheat and wool sent around the Horn. These exports--of good keeping qualities and of sufficient value to absorb shipping costs--were typically those of a remote frontier. The war demonstrated the isolation of California and the desirability of better communication between the Pacific coast and the remainder of the nation. The war thus helped secure federal aid for building a railroad to the Pacific. It helped also to start a wave of migration which further changed the face of the state. More transportation, faster communication, and immigration contributed to the increasingly intensive occupation which has since characterized the Rancho Azusa de Duarte and other sections of the upper San Gabriel Valley.

Evidences of a Changing Economy

By 1872 southern California's transition from a Mexican cattle frontier to an American commonwealth was almost completed. Evidences that society was in flux and a new economy developing were apparent in occupation changes on the Rancho Azusa de Duarte. A railway had crossed the continent in 1869, and although a branch of it did not reach Los Angeles until 1876, the completion of the Central Pacific somewhat mitigated the isolation of the entire state. Mounting American immigration to the Pacific border helped intensify the use of irrigable land and directed occupation toward the patterns of today.

Sale of the Duarte Rancho to a Subdivider

An event which directly affected the occupation of the upper San Gabriel Valley was the sale of the Duarte rancho to a subdivider. As noted above, all previously unsold portions of this rancho were sold in 1868 to Alexander Weill. Weill had the tract resurveyed and offered for sale 130 forty-acre tracts and 45 plots of various

sizes. With the post-war influx of immigrants, this subdivision was a harbinger of the shifting of pastoral to agricultural occupation.

The "No-Fence Law"

As crops encroached upon pastures, Duarte farmers joined vigorously in complaints against the Trespass Act of 1850. This law, which had been beneficial when the open range prevailed and barbed wire unknown, required the fencing of crop land. It provided that a stone enclosure four and one-half feet high, or rail enclosures five and one-half feet high, were lawful fences. A hedge was also a lawful fence if five feet high and close enough to turn stock. If stock broke into grounds enclosed by a lawful fence, their owner or manager was liable for damage. If a farmer with unfenced crops injured intruding stock, he was liable for damage to their owner. In the Coastal Plain where the water table was higher than in the San Gabriel Piedmont, quick-growing willows were widely used for hedge fences. In the San Gabriel Valley the tuna, familiar from mission days, and bois d'arc, available from Los Angeles nurseries, were the chief reliance. In the arable parts of Duarte, stone fences were impractical because of their cost in labor, whereas in the rocky riverwash section there were no crops to fence. Wood for fences was scarce and, even if obtainable, cost more than the land it protected.¹ Feeling among Duarte farmers was aflame for a "no-fence law." One of them had just planted the rancho's second orange orchard. He was a member of the state legislature and introduced a bill which in 1872 was passed as "An Act to Protect Agriculture and to Prevent the Trespassing of Animals upon Private Property." The passage of this bill signaled California's change from a pastoral to an agricultural state. It permitted bois d'arc and tuna hedges to disappear from Duarte's landscape as unfenced farms expanded. The year 1872 can therefore be said to mark the end of the early American period when occupation of the rancho was pre-eminently pastoral and the beginning of the era in which crops dominated occupation.

¹Adobe brick was used in the Mexican period for fencing small areas, but adobe fences were generally not high enough to meet specifications of the Trespass Act. Some were raised by a row of cattle skulls with the long, curving horns pointing outward, making fences almost impossible for man or beast to scale. The discovery of the value of the San Joaquin Valley for wheat-raising emphasized the need for a no-fence law.

Interest Rates and Occupance

The inordinately high interest rates which prevailed in the Los Angeles area in the early American period affected the use as well as the ownership of land. High interest had been a serious obstacle to agricultural development on borrowed capital, but by 1872 the fantastic rates which Andres Duarte had been obliged to pay in the fifties had been reduced to 11 or 12 per cent per year. This lowered interest, which permitted financing the purchase and development of farm land, helped mark the end of an era.

Extension of Irrigation

By the close of the early American period in 1872, irrigation was being practiced on 60,000 acres of California land.¹ Thereafter an influx of immigrants, expanding local markets, and improved access to distant centers of trade encouraged the expansion of irrigated crops. Before 1872 there were perhaps 250 to 350 acres of Duarte land irrigated regularly or occasionally. Thereafter the sales of lands with water rights helped expand the irrigated area and intensify tillage. With the extension of ditches, flumes, and pipelines, irrigation stimulated horticulture. Soon the rancho had a different appearance than in the early American period when grazing and field crops dominated its arable section.

Incipient Demands for Farmer Co-operation

In 1872 incipient demands for co-operative marketing of agricultural products began to be heard, such as that published by the State Board of Agriculture:

The truth is the grain merchants, the hucksters, the middlemen, the shippers, the railroads, the sack makers, the law makers, the assessors and the tax collectors manage to hold the agricultural classes in a condition of servitude unparalleled in a free country. . . . The farmers and fruit growers must combine for their own protection, as the grain dealers and hucksters combine for their own profit--otherwise they will continue to labor for the benefit of those who, however useful as a class, produce nothing.²

¹Hutchison, op. cit., p. 44.

²E. J. Wickson, Rural California (New York, 1923), pp. 288-289.

Such declarations led to the formation in 1872 of the California Farmers Union for the avowed purpose of protecting agricultural interests. The organization announced plans to work for a reduction in freight rates to permit profitable marketing of perishable products, but commercial and transportation interests muzzled it. Nevertheless, the outbursts of 1872 helped mark the end of one era and the beginning of another. Occupance in the new period was to be affected by a railway's control of the state's governmental machinery and by the first faltering steps toward cooperative marketing of horticultural products.

CHAPTER IV

OCCUPANCE OF THE DUARTE RANCHO IN THE PERIOD OF FIELD CROPS AND HORTICULTURAL EXPERIMENTS (1872-1900)

During the period of field crops and horticultural experiments which began in 1872 and ended with the century, the landscape of the upper San Gabriel Valley lost all traces of the pastoral occupance which had long characterized it. By the end of this period the major outlines of the valley's present agricultural pattern were established. During these eventful years the landscape of the old ranchos reflected experimentation with commercial crops, the coming of railroads, an influx of immigrants, an unparalleled boom, a long depression, drought, floods, and improved irrigation facilities. The purpose of this chapter is to consider the geography of the Rancho Azusa de Duarte in the light of the events and circumstances of this period.

Duarte Occupance in the Seventies

Houses

The map of the Rancho Azusa de Duarte made by the county surveyor at the dawn of the period of field crops and horticultural experiments (Fig. 14)¹ reveals continuing disintegration of the original grant, for eighteen persons are named as owners of small holdings. Most of the rancho, however, was under Alexander Weill's ownership. There were at least seven houses on the rancho in 1872, besides Indian jacales. In the northeast was the Duarte adobe (Fig. 11), in the southwest were five houses on or adjacent to the Beardslee land, and near the rancho's west boundary was the

¹The Hancock map of 1858 (Fig. 12) and the Strobel map of 1860 (Fig. 13) labelled the mountains north of Duarte the "Azusa Mountains," but on the map of 1872 which was made by Frank Lecouvreur, the county surveyor, the name "San Gabriel" appears for both mountains and river.

shack of a sheep rancher. The eleven brush jacales ("jackalls" in Fig. 14) were distributed as in 1860 (Fig. 13). These shacks were still aligned along the water ditches and near the fields the Indians helped cultivate. Two jacales were east of the Duarte homestead, but most of the others were on land of recent purchasers nearer the center of the rancho. The number of jacales suggests the possibility that the rancho's Indians in 1872 may have exceeded its white population.

With two exceptions, all the houses on the rancho in the early seventies have long since disappeared. The older of the two remaining houses is a well-built structure of two stories on the south side of Duarte Road between Mountain and Buena Vista Avenues which was built from lumber hauled in wagons from the port of San Pedro. The other remaining house is the one Dr. Beardslee built for his home in the middle seventies. Its lower story is walled with thick adobe, but its second story is of wood sawed from timber in Sawpit Canyon. The several small houses on the Beardslee place were built of adobe. The other houses which have disappeared were small frame structures, hot in summer and cold and damp in winter. Until cisterns and tanks for storing water for domestic purposes came into general use in the eighties and nineties, water was dipped from the ditch and stored in barrels and ollas. Not until the eighties and nineties when facilities for water-storage for farms were available, did running water or even hand pumps become general. With the coming of the railroads in those decades, building materials were increasingly available. Then houses became larger and more substantial and plastered inside walls supplanted the muslin walls of "California houses."

Land Sales and Occupance

The sharp recession which set in in 1872 following the prosperous aftermath of the Civil War beckoned many settlers to the Los Angeles Lowland to make a fresh start in a new area. A stream of immigrants arrived over the Gila River route from the South, which was suffering from war and reconstruction. Many of these newcomers, chiefly from Texas, stayed in or near El Monte while looking about for land. Most of the few who settled "on the Duarte" before 1872 bought land in "Lower Duarte." Perhaps this section was preferred because it was nearer El Monte, San Gabriel, and Los Angeles than "Upper Duarte." Then, too, it was accessible



FIGURE 14

15502



LOS ANGELES COUNTY CALIFORNIA

surveyed and subdivided at request of

Eugene Meyer Esq^r
July 1872

July 1872

by
Frank Secor & Co.
County Surveyors of Los Angeles Co.

A full true and correctness of the original reduced from the scale of 10 lbs to each of the inch recorded Jan 11 1884 of Samina just 11 p 121 at request of J H Wright

Chas E. rules Co. Sta. 1884

to the Beardslee ditch, whereas much of the north section of the rancho was not yet irrigable because no ditches had yet been constructed beyond the immediate vicinity of the Duarte homestead, and because much of the higher land was inaccessible to gravity flow. Purchasers of Beardslee land which had been cleared of its thin cover of brush paid as much as 60 dollars per acre, acquiring water rights with their land. Beardslee sold twenty acres in January, 1872, for 1,200 dollars, conveying land and

also the right to use water for irrigating and other purposes from any or all of the ditches of N. Beardslee for eleven hours on each of the following days of the month: the first, fifth, tenth, fifteenth, twentieth, twenty-fifth, and last day of each month, with proportionate ownership of the ditches and water right of the grantor.¹

Through his agent, Weill extended the ditches constructed by Andrés Duarte, and in 1873 began offering land for sale. With each parcel sold, he conveyed rights to water from the Duarte ditch. Thus in January, 1874, for a consideration of 800 dollars, he sold forty forty acres,

together with convenient right-of-way upon the adjoining lands of Weill for the necessary ditches for irrigations and subject to right-of-way of ditches of Weill.²

Such sales of land with water rights gradually induced material changes in the occupance of the rancho, for they made feasible the cultivation of small irrigated farms which permitted an increase in population.

Pastoral Occupance and Fences

The extent of pasture land in Duarte at the dawn of the period of field crops and horticultural experiments cannot be definitely ascertained. The "lines of brush" (Fig. 14) which separated cleared from uncleared land, marked the edge of the native chemisal--an association of scattered cactus and low shrubs between which animals could readily make their way to pasture on grass, alfilaria, burr clover, and other small plants. In the northeast the lines of brush doubtless bordered the tuna hedges Andrés Duarte had planted to protect his garden, orchard, and vineyard from stock. The wavy lines around three sides of the Beardslee rectangle in Figure 14 denote the Osage orange bushes (bois d'arc or "bodock") planted to keep out stray stock for, as explained above,

¹Records of Los Angeles County, loc. cit., Deed Book 28.

²Ibid.

until 1872 farmers had been required to fence out stock. Along the north side of the Beardslee place closely spaced eucalyptus trees were planted in the seventies. The lines of brush noted in Figure 14 disappeared with the extension of farming, but some hedge fences remained in the southwest of the rancho into the nineties. By the end of the century, few Duarte ranches were surrounded by fences of any kind.

The drought of the sixties had accelerated the changing of cattle pastures into farms upon which the raising of livestock and of crops were combined. That disastrous drought had also helped revolutionize pastoral occupance by giving prominence to sheep and shifting the marketable product from beef and hides to wool. During this revolution in land use--a revolution abetted by the demand for wool for Union army uniforms--California's wool clip soared from 5,500,000 pounds in 1862 to over 22,000,000 pounds in 1871.¹ The sheep ranch in the west part of Duarte (Fig. 14) was thus an occupance feature which reflected in miniature the widespread replacement of cattle by sheep. This sheep ranch was no doubt merely the headquarters for shepherds who pastured their flocks on any available land. Local settlers raised few sheep, but flocks from the lower plains were often driven to "the Duarte" in search of water and pasture, especially during the disastrous drought of 1876-1877.² There is no evidence of great flocks of sheep on the Duarte rancho after that searing season, for the catastrophe was nearly as serious to the sheep industry as that of the sixties had been to the cattle business. It almost destroyed the sheep industry of southern California, and thereafter subdivision and cultivation prevented its revival.

Native and Planted Trees

Many features of the natural landscape remained unchanged by occupance at the dawn of the period of field crops and horticultural experiments. Oaks still dotted the higher parts of the rancho, but were absent from the cultivated fields in the center of the grant where--never so abundant as at higher elevations--these ancient trees had been cut to make way for crops and to fur-

¹Cleland, From Wilderness to Empire, op. cit., p. 323.

²Norman and Norman, op. cit., p. 110.

nish firewood. Graceful pepper trees (Shinus molle), introduced into California from Peru in the early sixties, were beginning to ornament the Duarte landscape and to shade farmhouses. Eucalyptus trees, brought to California from Australia two decades earlier, had not yet appeared in large numbers in Duarte in 1872, but within a decade they were planted in many farmsteads, along some of the roads, on many property lines, and in some vacant fields. These quick-growing "blue gums" (Eucalyptus globulus) furnished shade and firewood, and optimists expected them to provide some of the much-needed lumber.¹

In 1871 the Pioneer Nursery was established on the south side of Duarte Road just west of the present Buena Vista Avenue.² This nursery supplied settlers of Duarte and vicinity with ornamental plants, as well as with trees for their new orchards. Many of the large camellias which still grace the gardens of old homes were imported by this nursery from Japan, and scores of the giant Duarte palms came from it. Thus the nursery, itself an important occupance feature, affected occupance throughout its trade area. Other nurseries influenced Duarte occupance through direct sales to residents and through exchanges with the local nursery. A Los Angeles nurseryman introduced and sold new varieties of oranges which affected Duarte's occupance and prosperity. These varieties --the Mediterranean Sweet and St. Michael--were widely planted in Duarte in the late seventies, competing with seedlings for irrigated acreage until the introduction of the Washington navel orange in about 1880.³

¹In 1875 the Forest Grove Association of Los Angeles planted 80,000 eucalyptus trees between Los Angeles and Anaheim in the hope that these trees would alleviate the lumber shortage. Because the deep roots of the eucalyptus absorb much water, most of these noble trees have disappeared from the Duarte landscape.

²When the Santa Fe came through Duarte in the eighties and built its station at West Duarte, the Pioneer Nursery moved one mile west to be across the road from the new station. The successor to the Pioneer Nursery now uses this site on Duarte Road for growing grounds and for its wholesale department (Plate III).

³The son of the Los Angeles nurseryman who introduced these new varieties lived on the largest mesa above Duarte (Fig. 4) where he planted exotic trees on the nearly frost-free land. He planted an orchard of citrons whose fruit resembles huge, thick-skinned lemons. The peeling from these citrons was cured in a little factory in Monrovia in the first decade of this century. The citron trees have long since been replaced with avocados. It was on this same mesa that the Spinks variety of avocado was later developed.

Field Crops

Winter Crops.--Crop land expanded but little between 1860 (Fig. 13) and 1872 (Fig. 14). Purchasers generally upon breaking their land planted it to winter field crops. Hay, the major crop in 1872, consisted almost entirely of grains grown in the rainy season and cut before maturity. As in the previous decade, barley was the principal hay crop in both acreage and value. Farmers found its high yields and free-stooling an advantage, as well as the manner in which it produced a volunteer crop. They liked its resistance to rust, and discovered in the dry winter of 1876-1877 that it could endure considerable aridity. They broadcast the seed in the early winter after a rain, and cut the crop for hay the following June. They grew wheat by the same methods, but their simple cultural practices were in contrast with those of the bonanza wheat growers of the Central Valley where some of the ducal mechanized farms were as much as eight times the area of the entire Duarte rancho. Rust, which thrived in spring high fogs, sometimes allowed but a small wheat harvest in the San Gabriel Valley.¹ The grain was sacked and hauled away in four-horse wagons to be sold or traded for goods. Wheat not sold in Los Angeles was hauled to the Dalton mill in Azusa, to a little mill in Puente, or to one near San Gabriel, the wagon returning with flour for the family larder.

Irrigated Field Crops.--Corn held first place among Duarte's irrigated field crops in the seventies. Shelled corn, produced in phenomenal quantities on the virgin soils, was the principal money crop, as well as a vital supply crop. On every farm, corn helped feed the horses, milk cows, hogs, and poultry, and on nearly every farm some corn was saved for seed and hominy. The surplus was sold in Los Angeles, where the predilection of the native population for corn as food provided a market. In its emphasis upon corn, Duarte was representative of Los Angeles County. In 1870 the county produced 454,896 bushels of corn but only

¹J. DeBarth Shorb, a prominent rancher of the San Gabriel Valley, wrote in 1879: "I have seen year after year as good a stand (of wheat) as ever I saw in Frederick County, Maryland. The only troubles we have had to contend against have been the rust on the one hand and the want of a market on the other. From the introduction of the Odessa wheat, the first difficulty has been solved, and our mills and vessels loading at Wilmington solve the other." (Shorb Letter Books, Henry E. Huntington Library, San Marino, California. Quoted by permission of the Huntington Library.)

12,210 bushels of wheat, whereas the state in that year produced only 1,221,222 bushels of corn but 16,676,702 bushels of wheat.¹ This emphasis on corn in Duarte, as in much of the county,² continued until field crops were crowded out by horticulture. Sorghum supplemented corn as fodder. It had been introduced into the Los Angeles Lowland in the fifties in attempts to provide a local source of sugar, but by the seventies it was valued as a forage plant and given a place in the crop combination of most farms.

Alfalfa, which had been brought from Chile twenty years earlier, was still of minor importance in Duarte in 1872, but as its many merits were appreciated, the acreage devoted to it expanded. Farmers soon learned that this deep-rooting crop would produce from one to three cuttings with 15 to 20 inches of rainfall, but would yield five or more cuttings if they added the same amount or more water by irrigation during the summer and fall. They therefore planted alfalfa in many fields where water from the ditches could be turned on them. These fields formed patches of vivid green in the generally brown landscape of summer and autumn. With several cuttings per year, alfalfa became a major source of hay and forage. Its multiple cuttings reduced the acreage required for supporting livestock, making more land available for other crops.

Duarte field crops in the seventies included white and sweet potatoes. Both spring and fall crops of white potatoes were grown for home use and for marketing in Los Angeles. There they sometimes brought good prices, but again yielded less than production costs. Sweet potatoes were a favored crop for home consumption, but the surplus was sold. In some years fields of watermelons were grown and the surplus melons were hauled to commission merchants in Los Angeles.

Viticultural Occupance

In the seventies viticulture was the outstanding type of intensive agriculture practiced in the Los Angeles Lowland, both in acreage devoted to vines and in income the vines produced.

¹U. S. Census Office, Ninth Census, Vol. III, Statistics of Wealth and Industry (Washington, 1872), p. 105.

²Los Angeles County now leads all California counties in the production of corn. This leadership is attributed to growing corn for silage in the dairy belt of the coastal plain.

Vineyards were then scattered through the arable part of Duarte, but there was none comparable in extent with that in the north part of the Rancho Santa Anita, portions of which still exist (Plate II). Duarte vineyards were also small and few in comparison with those around San Gabriel or in Los Angeles, "the city of vines." A vineyard of forty acres had been planted by the seventies west of the old Duarte homestead on the road still known as Vineyard Avenue. In the southwest twenty acres of Mission grapes had been planted on the west side of dusty California Avenue. A smaller vineyard near the end of Mountain Avenue survived for years, despite neglect and stony soil (Fig. 6). A vineyard covering nearly fifty acres radiated from the present airport site, and patches of vines were widespread. Most Duarte farmers of the seventies were specialists neither in viticulture nor viniculture, but were general farmers whose vines produced but one of their several small crops. Most of those who marketed grapes sold them to the Sunny Slope Winery south of the Rancho Santa Anita or to a winery in San Gabriel. By the end of the century, most of the little vineyards which had been adjuncts of general farming had disappeared to make way for orchards in a land-use pattern increasingly dominated by tree crops. A strong sentiment for prohibition had combined with the destructive and mysterious "Anaheim disease" of the eighties and with competition from orchards to end a type of occupancy which had been distinctive throughout the Los Angeles Lowland.¹

Horticulture

By the seventies, Duarte orange orchards were of growing areal and economic significance. The first orange orchard was planted on Vineyard Avenue in the late sixties. Early in the seventies the second grove was planted on a forty-acre tract on the south side of what is now Huntington Drive or Highway 66. As compared with later orchards, these seedling groves had an open formation, for their trees were set at the rate of 60 to 75 per acre instead of the 90 to 100 prevalent later. The success of

¹Wine-making was the major form of manufacturing in Los Angeles County in the seventies as it had been in 1860 (Table 6). When the Southern Pacific reached Los Angeles in 1876, wine was the only freight available in carload lots. California wines had a reputation for poor quality, but there was a widespread belief that they were improved by the long voyage around the Horn.

orange growers in Los Angeles and San Gabriel¹ and the lively market in San Francisco² encouraged the extension of citriculture, but a serious freeze in 1878 temporarily checked its expansion. As growers discovered that greater frost damage to trees and fruit occurred on the lowlands than on the uplands, many subsequent plantings throughout the Los Angeles area were on higher ground.

Before and after the freeze of 1878, most Duarte farmers cautiously spread their risks, planting small orchards of seedling oranges or of one of the newer orange varieties and other orchards of deciduous fruits. Seedling oranges had the disadvantage of requiring eight or nine years to come into full bearing, whereas deciduous fruits produced crops in half that time. There were as yet no standards for picking, grading, or marketing. Oranges were either sold by the thousand to buyers who came to the grove, or were delivered to a commission merchant in Los Angeles. The market for deciduous fruit was restricted until the practice of drying it became general. A large dryer established in Los Angeles in 1874 was a forerunner of the dryers in Duarte which for several decades reduced apricots, peaches, and prunes to compact, durable, and marketable form.

Roads

The pattern of Duarte roads in 1872 (Fig. 14) was almost identical with that of 1860 (Fig. 13). None of the trails which twisted to avoid a mud puddle in winter or a chuck-hole in summer had yet been straightened and graded. One road led to the river in the northeast, but no bridge as yet facilitated crossing what was sometimes a torrential current and again a dry expanse of

¹In 1868 in the article, "Tropical Fruits of California," W. C. Bartlett reported 10,000 bearing orange trees in Los Angeles County (Overland Monthly, I, 263-268). He estimated yearly profits at \$50 per tree, or \$3,000 to \$4,000 per acre. Although profits from oranges were at first phenomenal, census statistics of 1870 suggest that Bartlett's figures were optimistic. In that year the value of all Los Angeles County orchard products is listed as \$74,000 (Ninth Census, *op. cit.*, p. 106). E. B. Norman has told the author of receiving \$75 in 1883 for oranges from a one-acre grove. This Duarte grove was seven years old, hence not yet in full bearing. Today this orchard of budded seedling oranges contains Duarte's largest citrus trees.

²"In 1866 San Francisco imported 3,000,000 oranges from Mexico and the islands of the Pacific, whereas only 250,000 were received from the vicinity of Los Angeles." (H. J. Webber and L. D. Batchelor, The Citrus Industry [Berkeley and Los Angeles, 1943], I, 39.)

rocks. No road crossed the southeast of the rancho where the floods of 1861-1862 and 1867-1868 had expanded the stony terrain.¹ South of this boulder-strewn area was the Lower Azusa Road leading from San Gabriel to the little settlement of Lower Azusa which squatters had established on Dalton's rancho. One wagon road from southwest Duarte led to El Monte and another to San Gabriel and Los Angeles. Less than thirty years had elapsed since Americans had brought the first wagons into the state, and roads were still poor. Occasionally a sturdy ox team which had brought settlers across the Plains could be seen cultivating a Duarte field or pulling a wagon, but most travel was by horseback, horse-pulled wagon, or cart.

Public Service Features

The Duarte School.---There was no Duarte school district until 1873, but a few Duarte boys rode their horses to the county school in El Monte. In June, 1873, twelve settlers of the rancho and vicinity, five of whom had Spanish names, petitioned the county supervisors for the formation of an elementary school district. Their petition expresses the isolation and low population density which prevailed in the San Gabriel Valley in the seventies:

The undersigned, residents, property owners and heads of families in Azusa Township, respectfully represent: that they reside in that part of the township which lies west of San Gabriel River and that we are so remote from any school that we are utterly deprived of school facilities. Therefore, your petitioners would pray for the formation of a new school district, to be called the Duarte District, described as follows: Beginning at the Geo. H. Peck southwest corner, which is the southwest corner of Azusa Township, thence northwesterly to Santa Anita Canyon, thence north to the north line of Los Angeles County, thence easterly along said line to San Gabriel River, thence southerly along said river to the southern boundary of Azusa Township, the above being intended to include all of Azusa Township west of San Gabriel River and the mouth of Santa Anita Canyon, so as to include the settlers at the foot of the mountains.²

As the petitioners requested a district which would have extended from the northeast part of the Rancho San Francisquito across the

¹In the flood of 1861-1862 the swollen San Gabriel became blocked on the east side of Duarte, forcing a new channel for itself. In the flood of 1867-1868, though the stream had previously been forced back into its old channel, it took the new course which it has since kept. The "New River" is now the San Gabriel and the one to the west is the Rio Hondo (Plate I).

²Records in the office of the Los Angeles County Superintendent of School, Los Angeles, California.

the Rio Hondo, the upper San Gabriel Valley, the mountains, and through forty miles of desert, their request was rejected. However, the supervisors authorized the formation of a smaller district to extend across the mountains but not into the Mojave Desert.

School opened in the fall of 1873 for a three-months' term with twelve children in attendance. For two years the classes met in a little adobe house which was part of the Beardslee farmstead. In January, 1874, Weill deeded the district for school purposes two acres on the northwest corner of Buena Vista and Central Avenues--then dusty, narrow roads. Soon a one-room unplastered or "California" frame building was ready for use. More immigrants arrived, and the little school had eighteen pupils by the end of its second year. Water for school use was dipped from the Beardslee ditch in front of the grounds, but within a few years a cistern and pump were installed to provide a dependable water supply. As more settlers came, a second one-room building was added to the school grounds.

When the first school building was finished, a union Sunday School was organized to meet in it. Soon Southern Methodist, Baptist, and Christian circuit ministers took turns preaching in it.¹ Thus the school site early became a community center.

Recreational Occupance.--In the isolated Duarte community people were thrown upon their own resources for entertainment. They organized such social and educational activities as spelling bees, Spencerian writing classes, debating societies, and singing schools--activities which helped unite the community, but made no imprint on the landscape. In 1874, however, the young people of the district appropriated an oak-covered plot a few hundred feet north of the present junction of Foothill Boulevard with Highway 66. Here they cleared out poison oak and underbrush and set up

¹According to tradition, the first Duarte land used for religious services was in the shade of a large oak on Fish Canyon Road. Under this tree, whose branches and trunk formed a cross, Andrés Duarte and his household held religious services when a visiting padre passed through the rancho. Duarte is said to have buried his Indians in a long-lost cemetery under the "church tree." In the eighties and nineties, the Chinese laundry was housed under this tree. The first cemetery of the American period was started by Dr. Beardslee when he buried his Texas Indians under an oak in what subsequently became Live Oak Cemetery on Duarte Road (Plate III). This cemetery is currently expanding eastward and southward.

picnic tables and swings. This site, which remained a favored picnic ground for over a decade, was the first Duarte land characterized by recreational occupance.

The Occupance Setting

The Physical and Cultural Setting

The surroundings of Duarte help explain the sequence of its occupance in the eventful period of field crops and horticultural experiments (1872-1900). Los Angeles, the county seat, in 1870 was a town of 5,728 which bore the stamp of its Spanish-Mexican origin, but when the period drew to a close, it was an American city of 102,479. The population of the entire county was but 15,309 in 1870, but by 1900, though its area had been greatly reduced, its population had mounted to 170,298 (Table 1). In the early seventies the adobe houses of city and county suggested a Latin-American adaptation to timber shortage, but by the end of the nineteenth century, buildings suggested an Anglo-American adjustment to available lumber and Victorian architecture. The pueblo of 1872 was still a rough and ready frontier cow-town, but it had had a bank for four years. The isolation of both city and county had been somewhat alleviated by the arrival in Los Angeles of the Southern Pacific spur line from San Francisco in 1876, but in 1878 when the new state constitution was adopted, Los Angeles County was still officially designated as one of the cattle and grain counties.

Improved mail service helped materially to reduce the isolation of the San Gabriel Valley during the period of field crops and horticultural experiments. Until Duarte had a post office in 1882, some settlers got their mail at El Monte, but most received theirs at San Gabriel, which was on the road to Los Angeles where they did most of their trading. A bridge across the Los Angeles River constructed in the seventies helped strengthen Duarte's connections with the county seat. In 1889 the first bridge was built across the upper San Gabriel River, facilitating Duarte's connections by road with the piedmont communities to the east. This bridge survived until 1923 when a concrete structure demanded by the automobile age replaced it. The bridge was of especial value in carrying mail across the river to settlements farther to the east.

The Economic Setting

Financial Conditions.--The sharp depression of 1873 had little immediate effect on Duarte, but by the winter of 1874-1875, the panic's effects reached even into this isolated community. Hard times were made harder by the failure in 1876 of the Temple-Workman bank in Los Angeles, a calamity which adversely affected the entire Los Angeles Lowland. After the panic created by the bank debacle had subsided, United States gold coin could be borrowed on farm collateral for as little as one-half of one per cent per month. Such a favorable rate of interest was conducive to improving farms on borrowed capital.

Labor.--Indians had worked in the San Gabriel Valley as vaqueros, farm laborers, and domestics. They had cleared land, dug for gold in the canyons, and trampled out the vintage, but by the late seventies, their numbers were declining so rapidly that there was an acute shortage of labor. By then Sonorans were performing much of the common labor and Chinese were filtering into the Los Angeles area. Chinese, who had done heavy work in the northern part of the state for over a decade, were soon doing more types of work in the Los Angeles area than the Indians ever had done.¹ In Duarte by the late seventies Cantonese in their great basket hats were picking oranges and carrying boxes of them on the ends of bamboo poles to places in the orchards where they packed the fruit. For over a decade these Cantonese did most of the work associated with the orange harvest. A Chinese laundry was established on Fish Canyon Road and some ranch families had Chinese cooks. When the first railroad was put through Duarte in the eighties, Chinese laid its ties and rails. The Chinese were responsible for many vegetable gardens disappearing from Duarte farmsteads, for they raised vegetables near El Monte which they peddled through Duarte and other communities.

Railways and Declining Isolation

Southern Pacific

With the end of the Civil War and completion of the Central Pacific to Sacramento in 1869, immigration to California mounted,

¹There were 11 Chinese in the county in 1860, 236 in 1870, and 1,170 in 1880. The state had 75,132 Chinese in 1880. (Tenth Census, Population, p. 51.)

but the Los Angeles area, which could be reached from the north only by steamer or stage,¹ received relatively few of the newcomers. In 1876, however, the Southern Pacific's line from San Francisco to Los Angeles was finished and the Los Angeles Lowland at last had connections with a transcontinental railway.² The railroad company energetically promoted settlement in Southern California where it had received extensive land grants as a subsidy. Despite the round-about route via Ogden and Sacramento, people came to the Los Angeles area. Some of the new population spread into the rural sections, and new families settled "on the Duarte." With the coming of the first railway, the county and city of Los Angeles began that phenomenal population growth which still characterize them. In the decade between 1880 and 1890 the population of the county increased from 33,381 to 101,454 (Table 1), and the southern counties experienced a population growth of over 250,000.

In April, 1877, the Southern Pacific met the Texas Pacific on the Colorado River at Yuma, thus providing southern California with another transcontinental connection. The Atlantic and Pacific Railroad had reached Albuquerque in 1873, but the panic of that year caused its operation to be suspended for a time. Meanwhile, the Atchison, Topeka, and Santa Fe was pushing westward. In 1875 it consolidated with the Atlantic and Pacific and thrust on to Needles, whence for a decade the powerful Southern Pacific prevented its reaching the Los Angeles Lowland. The Southern Pacific was also absorbing lines to the eastward, and in 1883 it reached New Orleans, thus completing its "Sunset" route.³

¹In 1875 Los Angeles had a stage line via El Monte, San Bernardino, and Yuma which tied it with Arizona, New Mexico, and Texas. Another stage line connected it with Stockton by the Tehachapi route. A third gave it access to San Francisco via San José. The steamer to San Francisco sailed twice a month, taking most of two nights and two days for the trip. (Jackson A. Graves, My Seventy Years in California [Los Angeles, 1927], p. 97.)

²To induce the Southern Pacific to come to Los Angeles, the county donated 5 per cent of the assessed valuation of its property in stock in the Los Angeles and San Pedro Railroad, as well as a sixty-acre site for a depot. When one remembers that there were only 15,309 persons in Los Angeles County in 1870, the amount of this subsidy assumes significance.

³For the full story of the Southern Pacific and its ramifying influences on California's economy, see Oscar Lewis, The Big Four (New York, 1938).

Santa Fe

The Santa Fe was not long checked in its effort to reach the Los Angeles Lowland. The California Southern Company completed its line from San Diego to San Bernardino in 1883 and soon succeeded in buying the line the Southern Pacific had constructed from Barstow to Needles. The Santa Fe sent its first train to Los Angeles in 1885 over this line and over rails west of Colton leased from the Southern Pacific. Within two years, the Santa Fe had its own road from Barstow to San Bernardino, and with the passing of the California Southern Company into its control in 1886, it had access to the Pacific over its own lines. In the meantime, the San Gabriel Valley Railroad had built eastward from Los Angeles via Pasadena, reaching its terminus at West Duarte in 1886, and the Santa Fe was reaching westward from San Bernardino along the San Gabriel Piedmont. In 1887 the San Gabriel Valley Railroad thrust its line eastward through Duarte to meet the Santa Fe on the east side of the San Gabriel River. This linking of the San Gabriel Valley Railroad with the Santa Fe, which soon absorbed the local road, was an important milepost in Duarte's occupance history. Besides providing much-needed local passenger service, the Santa Fe furnished an outlet for commercial crops. It also provided overland passenger service, and soon was bringing in a flood of tourists and settlers and contributing toward an unparalleled boom.

San Gabriel Valley Rapid Transit Railroad

During the boom year of 1887 the San Gabriel Valley Rapid Transit Railroad was built westward from the new town of Monrovia to the Los Angeles city limits, but as terminal facilities were denied it in the city, passengers had to transfer to horse-drawn vehicles to reach the city's commercial core. Within five years, the road was taken over by the Southern Pacific, which gave it terminal facilities. In 1896 the Southern Pacific extended the line eastward nearly to the San Gabriel River and constructed a station on the south border of the Duarte townsite, whence an accommodation train made two round trips daily to Los Angeles. The Southern Pacific's transcontinental connections via Ogden and Yuma, added to the existing Santa Fe main line, in reality gave Duarte three transcontinental routes. These connections not only mitigated isolation; they also helped change Duarte from a remote

and largely self-sustaining community to one with fortunes closely linked with those of other regions of the nation.

TABLE 7
IRRIGATED CROPS OF DUARTE IN 1888^a

Crop	Number of Acres
Citrus	420
Deciduous fruits	780
Vines.	190
Summer crops	160
Alfalfa.	50
Total	1,600

^aSource: Estimate of William Hammond Hall, Irrigation in California (Sacramento, 1888), Part 2, p. 453.

Rising Horticultural Occupance

Agriculture advanced rapidly throughout the Los Angeles Lowland during the eighties. Experiments were over with such crops as cotton, tobacco, and silk, and orchards were in the ascendency. The dread Anaheim disease was blighting vines and motivating the substitution of tree crops for vineyards. Besides bringing settlers eager to enter the over-advertised business of raising fruits, the railroads, aided by ventilated refrigerator cars, were giving access to new and distant markets. New markets stimulated further extension of horticulture. Under such influences, despite mounting threats to its water rights, the irrigated area of the Duarte rancho had risen from about 533 acres in 1880 to approximately 1,600 acres in 1888, with orchards expanding in the areal pattern.¹ In 1888 the Duarte Mutual Irrigation and Canal Company was serving 1,100 acres and the Beardslee Water Ditch Company was furnishing water to 500 acres.² As water was used on vines and deciduous orchards only in the spring, not over 700 acres were irrigated in summer. Table 7 summarizes facts concerning irrigated acreage on the Duarte rancho in 1888.

Deciduous Orchards and Fruit Dryers

Deciduous orchards competed successfully with citrus groves

¹Ibid., p. 453. ²Ibid.

for irrigated acreage in the eighties (Table 7), but by the end of the century they were beginning to lose the areal competition. Orchards of prunes, peaches, and apricots were scattered from the foothill mesas to the southwest plain. In the eighties much fresh fruit was hauled to the growing Los Angeles market, but the wagon trip necessary before the coming of the railroads was long and trying, and returns from commission merchants were uncertain. With the coming of railways, local fruit-drying developed. Dryers were established in or near the larger orchards, and boxes of fruit from smaller nearby orchards were hauled to these dryers. Here prunes were dipped and spread on trays to be cured in the summer sun. Men and boys shook apricot and peach trees and picked the fruit from the ground, or they picked it directly from the trees into boxes. Women and children spent long hours under shade trees cutting the fruit and spreading it cut-side up on trays. After being stacked a few hours in portable houses for sulphuring, these trays were spread in the sun until the fruit was dry. When sufficiently dry, the fruit was stored in sheds for further curing and then shoveled into sacks. The dried fruit was usually sold to buyers who came to the ranches, but the price they offered was often disappointing. Although the dryers were centers of feverish activity for a few weeks in the hot, dry summers, they left no imprint visible in today's landscape.

In an attempt to promote more orderly selling and obtain higher prices, the Duarte Deciduous Association was formed in 1897, with its directors representing all sections of the community. The association rented a drying ground southwest of the corner of the Foothill Boulevard and Buena Vista Avenue. There cutting tables were set up under the giant oaks and a drying area was cleared for trays. Many growers of deciduous fruit in the north section of the rancho hauled their fruit to this dryer. Others, especially in the southwest, used their own drying grounds and equipment, but marketed their dried fruit through the association.

Some wary growers during the eighties and nineties preferred a variety of deciduous fruits in order to be assured a cash income in case the profit from one variety was curtailed by unfavorable weather, lack of labor, or low prices. However, as oranges had less sharp seasonal labor peaks than deciduous fruits, spoiled less readily, bore more consistently, and generally yielded a higher income per acre, orange groves multiplied.

Citricultural Occupance

The number of boxes of oranges shipped from the San Gabriel Valley during the period of field crops and horticultural experiments provides a measure of the advance of citriculture. In 1874 the valley produced 25,619 boxes of oranges from 60,000 trees, about 80 per cent of which came from a single grove west of Duarte and southeast of Pasadena.¹ By 1890 the valley shipped 102,025 boxes, of which Duarte supplied 32,269 boxes and Monrovia, which by then had absorbed part of the Duarte rancho, supplied 1,998 boxes.² Many factors combined with the coming of the railroads and the growing population to bring about this increased orange production and the expanded citricultural occupance it connotes. The mistaken though widely held belief that raising oranges is an easy occupation doubtless was a contributing cause. The demonstration that citrus fruits could be shipped long distances without spoiling was a factor in expanding their production. The discovery that citrus trees and fruits tended to survive frost damage on the higher lands led to the increased planting of uplands,³ as in Upper Duarte, where most of the arable and irrigable land was in oranges by the middle nineties. But the outstanding reason for the growing emphasis on oranges in the horticultural pattern was the introduction of the "Washington" navel orange from Bahia, Brazil.⁴ In the interior of the Los Angeles Lowland this tree lived up to its Brazilian reputation, producing large, seedless oranges of brilliant color and high flavor. Budwood from the pioneer trees at Riverside was transferred to hundreds of Duarte seedling trees, and all new orchards were of the navel variety until about 1890, when the Valencia began competition with it for acreage. In 1884 California navel oranges attracted attention by winning nearly all orange prizes at the New Orleans exposition, and soon they were

¹Harold D. Carew, History of Pasadena and the San Gabriel Valley (Springfield, Illinois, 1930), pp. 481-506.

²Ibid.

³The value of uplands was demonstrated at Riverside where a citrus colony was founded on mesa land purchased from a defunct silk company. The land was so dry it was deemed poor sheep pasture where "even coyotes carried canteens." The colony's success proved that orange trees would grow on seemingly sterile mesas and demonstrated the advantage of temperature inversion.

⁴The Washington navel was imported by a New York nursery before its introduction into California. A Florida grove from scions from this nursery was destroyed in the Seminole war. (Hutchison, op. cit., p. 219.)

the favored orange in eastern markets. By 1886 the southern California counties shipped 2,250 carloads of oranges¹ and, despite its hazards, growing oranges had become the regions's most popular horticultural enterprise.

A spectacular victory over one of the first destructive pests to threaten citricultural occurance was won in the eighties. The cottony cushion scale (Icerya purchasi) had been inadvertently introduced from Australia in about 1870. This insect clings in cottony masses to the branches and foliage of the trees and shrubs upon which it subsists. By the late seventies it was threatening the existence of some citrus groves, and by the mid-eighties had apparently doomed the citrus industry, for badly infested trees failed to produce new growth or to set fruit. Since the pest had been known in Australia as an unimportant insect, an entomologist was sent there in 1888 to seek the parasite responsible for its harmlessness. The vedalia, a predacious ladybird beetle (Vedalia cardinalis or Rodolia cardinalis) was discovered as the enemy responsible for holding the scale in check in Australia. Ladybird colonies were therefore sent to Los Angeles and environs. The beetle was readily established in groves and spread rapidly, devouring scale as it advanced. The owners of one Duarte grove thus relate their experience in saving their trees:

We took several thickly infested branches of orange trees over to Alhambra and placed them in Mr. J. R. Dobbin's orchard which the ladybirds had about cleaned out. As soon as the branches were laid down, the ladybirds hopped on the white scale and voraciously attacked them. In a short time the branches covered with the Vedalia cardinalis were brought home and placed in the orchard where they soon destroyed all the Icerya purchasi and moved on to the next orchard.²

This initial triumph over a threatening pest saved citriculture and established the biological method of pest control as a vital weapon in the perpetuation of citricultural occurance.

The Boom of the Eighties and Land Use

The boom of the eighties was the final step in the break-up of the great ranchos of the Los Angeles Lowland. It not only augmented the population; it also changed its character, for as the culture and language of the Anglo-Americans rose into ascen-

¹Caughey, op. cit., pp. 464-466.

²Norman and Norman, op. cit., p. 116.

dency, the mellow Spanish-American culture was completely sub-merged. Southern California has characteristically grown spasmodically, with major population spurts and occupance modifications accompanying land booms, oil booms, and war booms, but as compared with most flurries, the boom of the eighties was revolutionary.¹ After its exciting months, more than 130,000 newcomers remained in southern California as permanent settlers and the city of Los Angeles had increased its population by 500 per cent. Sixty new townsites were put on the market in 1887. Twenty-five new towns--some doomed to be ghost towns--soon dotted the San Gabriel Piedmont along the route of the Santa Fe.

During the many shifts in land ownership during the eighties, more of the uncultivated Duarte land was sold and some of its farms were subdivided into residence lots. In 1883, before the boom was well under way, L. L. Bradbury bought from Weill all the land of the Rancho Azusa de Duarte which Weill or previous owners had not sold--a total of 2,749.98 acres. As the boom gathered momentum, Bradbury sold 200 acres in the northwest of the Duarte grant to the subdividers of the new town of Monrovia. The stage was then set for the local phases of the boom.

Causes of the Boom

Among the many contributing causes of the boom were the final adjudication of titles to the ranchos, the recedence of Civil War issues, the elimination of potential raids by marauding Indians, and the outmoding of frontier vigilante justice. A more direct cause was a seven-year foundation of growing prosperity in the Los Angeles Lowland. The rising horticultural economy was both a cause of the boom's intensity and a cushion for its collapse.² Other major contributing causes of the boom lay in the inherent advantages of the Los Angeles area in site and position--advantages which strengthened the urban and rural economy, and acted as shock-absorbers for the collapse. Immediate causes of the boom included cut-throat railroad competition and a deluge of publicity about southern California.

¹Carey McWilliams characterizes the growth of southern California as "one continuous boom punctured at intervals by major explosions." (Southern California Country: An Island on the Land [New York, 1946], p. 114.)

²Glenn S. Dumke, The Boom of the Eighties in Southern California (San Marino, California, 1944), p. 462.

Railroad Competition--The principal immediate cause of the big boom is generally conceded to have been a rate war between Southern Pacific and Santa Fe. Tickets from Mississippi Valley points to Los Angeles cost 125 dollars when the rate war began. A five-dollar rate from Kansas City to Los Angeles was subsequently in force for three months, and for one day in March, 1887, the fare was cut to one dollar. Such reductions in fares stimulated the migration of hordes of people who otherwise would not have traveled. Freight, for which the Southern Pacific had been charging "all the traffic would bear," declined along with passenger rates, decreasing the cost of living in the Los Angeles area and increasing profits on goods shipped out. With lowered freight rates on their household goods, and with such inducements to travel as the directed excursion and the emigrant car with cooking accommodations, a flow of migration moved westward. Many of the tourists purchased land for speculation and prices soared.

Advertising--A publicity campaign which carried information about southern California to many parts of the world helped bring on the boom and the occupance changes it induced. Descriptive accounts, railroad propaganda, newspaper stories, real estate sales campaigns, and the publicity emanating from enthusiastic tourists and residents had combined to make southern California the most over-advertised section of the country. From Los Angeles, the nucleus of the frenzy and the focus of its publicity, the boom radiated through the coastal area to Santa Barbara and San Diego.

The most zealous protagonist of advertising was the Southern Pacific. This railroad, which reached Los Angeles eleven years before the Santa Fe, had received as its subsidy for railroad construction 10,445,227 acres of public land in California, the larger part of which lay in the southern part of the state.¹ To sell this land for immediate profit and to settle it to provide revenue from freight and passenger traffic, the company carried on an intensive sales campaign. Guide books, employment agencies, land offices, exhibits of California products, lectures, and excursions tempted actual and potential railroad passengers to buy land. Subsidized writers painted the country in glowing terms and praised its climate. The tubercular were encouraged to recover their health in a climate which "gives the individual a

¹Caughey, op. cit., p. 467.

stimulus and vital force" and the timid were assured that California was not a dangerous frontier but a civilized region.

As passengers were poured into Los Angeles by the rival railroads, they were pounced upon by real estate agents. Unscrupulous "boomers" from the Middle West, experienced in seductive advertising, arrived to partake of commissions on land sales.¹ Over a free lunch, salesmen extolled the cheapness of living, the picturesqueness of the Spanish background, and the cultural assets of a promised college. Such techniques succeeded in selling at mounting prices an enormous number of lots in newly platted towns. As most sales were made on contract with small initial payments, hundreds of lots reverted to their original owners or to the state when the boom subsided. As many contract sales and sales of options were never recorded, it is impossible to know how many sales were made. However, the recorded conveyances in Los Angeles County rose from an aggregate consideration of 6,000,000 dollars in 1882 to 96,000,000 in 1887. When these figures are compared with recorded sales totalling 40,000 dollars in 1868 and 200,000 dollars in 1869, years of a mild post-war boom, the intensity of the inflationary spiral of the eighties becomes apparent. In the meantime, the assessed valuation of all property in the county rose from 13,731,872 dollars in 1880 to 60,012,280 dollars in 1890. After the boom had subsided, the population of the county had risen from 33,381 in 1880 to 101,454 in 1890.

The San Gabriel Piedmont in the Boom Period

Of all the Los Angeles Lowland, the section struck hardest by the boom was the San Gabriel Piedmont. This plain, which had been the logical route for explorers entering the Los Angeles Lowland from the east, was also the logical route for railroads connecting the Mississippi Valley with Los Angeles. The Santa Fe approached the piedmont over the Santa Fe Trail through Cajon Pass, gateway from the Mojave Desert (Plate I). The Southern Pacific reached eastward through the San Geronio Pass (Plate I) to the Colorado Desert and the Gila River Trail. Settlement nodes east of Los Angeles lay along these railways. The upper San Gabriel

¹ A much advertised but flagrantly fraudulent subdivision lay south of the Duarte rancho in the bed of the Rio Hondo. There in "Chicago Park" streets which existed only on maps were given such names as State Street and Michigan Avenue.

Valley with its prosperous agriculture became the major center of the piedmont's boom activity. The Rancho Azusa de Duarte thus lay in the heart of the boom area. On its west side, E. J. Baldwin, the owner of over 8,000 acres of the Rancho Santa Anita, cut much of the west portion of his ranch into acreage lots and started the town of Arcadia. To the east, the central part of the Rancho Azusa de Dalton was sold to a subdividing company and the much publicized town of Azusa was laid out.

The Impact of Monrovia on Duarte Occupance

The boom town of the San Gabriel Piedmont which has most affected Duarte occupance was Monrovia. In 1884 W. N. Monroe, with a fortune from railroad building, purchased from Baldwin 230 acres of the Rancho Santa Anita adjoining that rancho's boundary with the Duarte rancho. With this land, which lay on both sides of the road now called the Foothill Boulevard, Monroe acquired rights to half the water from Sawpit Canyon. His associates bought over 200 acres of adjacent land in the northwest of the Rancho Azusa de Duarte from Bradbury, acquiring with the land the right to the remaining half of Sawpit's flow which Bradbury had acquired as successor in interest to Weill. With his associates, Monroe started the Monrovia Land and Water Company. From a camp under a giant oak he directed a force of Chinese laborers and mules in clearing the land of boulders and scattered brush. In March, 1886, engineers laid out the townsite of Monrovia, centering it on the north-south Myrtle Avenue and the east-west Orange Avenue--now Colorado Boulevard--south of which lay a great barley field. The center of the new town was less than one-quarter of a mile from the west boundary of the Duarte rancho. In May, when the new townsite was opened to lot buyers to the accompaniment of a brass band, a throng was on hand to attend the well-advertised sale. The auctioneer accepted bids of 100 dollars for inside lots and 150 for corner lots with free canyon water--a source of later trouble--thrown in. In the exciting months following the opening, many lots were sold over and over again as prices soared upward to 5,000 and even 8,000 dollars per lot. Building permits in 1887 totaled over half a million dollars and 167 homes were completed.¹

¹Joseph Netz, "The Great Los Angeles Real Estate Boom of 1887," Historical Society of Southern California Annual Publications, X (1915-1916), 57.

Shortly after Monrovia was founded, Bradbury offered lots for sale in a little townsite on the Santa Fe which he called "West Duarte." He built a hotel, two stores, a livery stable, and an office building, but his town did not thrive. Soon most of the buildings were moved to Monrovia and the station of West Duarte became the Monrovia station. Horse cars long connected this station in the west part of the Rancho Azusa de Duarte with the business center of Monrovia one mile to the north in the east part of the Rancho Santa Anita.

In November, 1887, to get rid of the saloon which they considered an undesirable occupancy feature, and to direct public improvements, the citizens of Monrovia voted in a mass meeting to incorporate their town. The population then numbered 500. The area of the new municipality included a triangle north of the Santa Fe and west of Shamrock Avenue which was part of the Rancho Azusa de Duarte. Sixty years later this triangle is still the most urbanized part of the rancho (Plate III).

With the establishment of Monrovia, the rural settlement of Duarte had access to a neighboring shopping center with several stores and two banks. The nearby town had also a large tourist hotel, three commercial hotels, a livery and feed stable, and a Methodist and a Baptist church. Soon the Monrovia school added a high school department which was to play an important role in the education of Duarte youth. Meantime the Duarte elementary school district shrank as the Sierra Madre, Arcadia, and Monrovia districts came into existence and acquired its westernmost area. The new Monrovia school district absorbed not only the part of the Duarte school district incorporated into the new town, but took also all of the unincorporated part of the rancho west of California Avenue. The proximity of Monrovia with its commercial, social, religious, and educational activities tended to check the development in Duarte's landscape of occupancy features devoted to those functions.

Imprint of the Boom on Duarte Land

The encroachment of Monrovia upon Duarte land was by no means the only imprint of the boom upon the landscape of the historic rancho. Across the road from the little building which housed the general store and post office, the "Duarte Townsite" of ten acres (Fig. 4) was laid out early in the boom period.

Its establishment removed the picnic grounds from Duarte's landscape and stimulated residential occupance on a site still characterized by that form of land use. The post office and store were soon moved across the street to use the site occupied today by the Duarte Market. A drug store and a livery stable which survived for over a decade were also established in the townsite. Across the road the Bonnie Highland subdivision was platted and the frame Highland Hotel was built, but the lots were not sold and became an orange grove and the hotel became a farm home. To the southwest--on the corner where a "super-service station" now emphasizes the junction of the Foothill Boulevard with Highway--a subdivision was laid out with much fanfare, but few of its lots were sold and the land was planted to orange trees.¹ Farther south on poor soil on the east side of Highland Avenue the Davis Addition (Fig. 4) was laid out. Within a few years poor houses were built on some of its lots and the foundation was laid for a present problem of sub-standard housing.

The owner of a small nursery in Lower Duarte took advantage of the inflated boom prices to subdivide his unused land into plots of from one to three acres. This subdivision, which is on the west side of Mountain Avenue between Euclid Avenue and Duarte Road, has since been identified by relatively closely spaced houses. To the southwest on the southeast corner of Euclid and California Avenues another subdivision was laid out, and a few houses were built which disappeared decades ago. Like some of the other subdivisions of the boom era, the streets of this subdivision existed chiefly on maps, and most of their area was planted to fruit trees. In 1947, however, the streets of this subdivision became realities in the landscape and the lots are being covered with "G. I. houses."

Duarte, which a promoter advertised as "staid, prosperous, and lovely," was relatively quiet during the boom. It had but two real estate offices and comparatively few subdivisions. In 1886 only one Duarte tract was subdivided outside Monrovia, and in 1887,

¹This tract was advertised in a Los Angeles paper in the form of letters, the Duarte correspondent petitioning the Los Angeles and San Gabriel Valley Railroad to run a two-mile spur eastward from West Duarte and appealing to "Butchers, Bakers, Grocers, Blacksmiths, and Tradesmen Generally." These letters were "not outstanding for originality or statistical accuracy, being usually verbose and provincially egotistic, but they were symptomatic of the boom and somewhat representative of local advertising methods." (Dumke, op. cit., p. 82.)

the peak year, there were only six, whereas in nearby Sierra Madre six subdivisions were put on the market in 1886 and nineteen in 1887.¹ None of the Duarte subdivisions produced a permanent commercial core for the old rancho.

Results of the Boom

The boom did not suddenly burst, but gradually shriveled up. Prices sank with the universal attempt to sell, and talk shifted from boasts about the climate to regret that there was too little manufacturing for a well-rounded economy. By 1890 taxes were delinquent on 359 parcels of Monrovia land. Most of the arable section of the Duarte rancho, including much of that absorbed into Monrovia, retained its status as agricultural land. Such agricultural strength helped save the economy from ruin. Though individuals in Duarte lost heavily in the boom, the community profited from decreased isolation and increased population. The boom brought people to the Los Angeles Lowland in mounting numbers, and the enlarged population helped build a stronger foundation for the economic structure of the region.

It enlarged transportation facilities and municipal development, settled hitherto barren areas, completed the breakup of the ranchos, and was largely responsible for southern California's modern publicity consciousness, which has done much to develop the southland. . . . The gold rush made northern California a real part of the United States; the boom of the eighties did precisely that for the south. Where once the "cattle of the plain" had grazed in silence over rich areas, now the American citizen built his trolley lines, founded his banks, and irrigated his orange groves. The boom was the final step in the process of making California truly American.²

A Post-Boom Appraisal of the Piedmont Section of the Los Angeles Lowland

The editor of Harper's New Monthly Magazine visited the piedmont section of the Los Angeles Lowland in the post-boom year of 1890, observing and describing it when its period of field crops and horticultural experiments was two-thirds past.

From San Bernardino and Redlands, Riverside, Pomona, Ontario, Santa Anita, San Gabriel, Pasadena, all the way to Los Angeles, is almost a continuous fruit garden, the green areas only emphasized by wastes yet unreclaimed, a land of charming cottages, thriving towns, hospitable to the fruit of every clime;

¹Dumke, op. cit., p. 82.

²Ibid., pp. 275-276.

a land of perpetual sun and ever-flowing breeze, looked down on by purple mountain ranges tipped here and there with enduring snow. . . .

The development of the country has only begun. . . . It will need further experiment to determine what are the most profitable products of the soil, and it will take longer experience to cultivate them and send them to market in perfection. . . . There has been too much emphasis on quantity instead of quality. . . . Sensible people do not any longer pay much attention to those tempting little arithmetical sums by which it is demonstrated that paying so much for ten acres of barren land, and so much for planting it with vines or oranges, the income in three years will be a competence to the investor and his family. . . . Few now expect to make a fortune by cutting arid land up into twenty-foot lots, but notwithstanding the extravagance of recent speculation, the value of arable land has steadily appreciated, and is not likely to recede, for the return from it, either in fruits, vegetables, or grain is demonstrated to be beyond the experience of farming elsewhere. . . . The lesson has been slowly learned, but it is now pretty well conned, that hard work is as necessary here as elsewhere to thrift and independence. . . . Southern California had its period of romance, of pastoral life, of lawless adventure, of crazy speculation, all within a hundred years, and it is just now entering upon its period of solid, civilized development.¹

The Depressed Nineties

In the summer of 1890 the Leslie Fruit Company of Chicago installed a dryer on the west side of the commercial core of Monrovia and bought apricots and peaches from growers throughout the valley. By employing 200 people during its first summer of operation, it helped mitigate the financial strain induced by the ending of the boom. Before the next drying season, the Leslie Fruit Company had acquired from Bradbury an eleven-acre site on the east side of California Avenue adjoining the Santa Fe. The plant operated on a larger scale on the new site, with a payroll during its second summer there which ran as high as 2,200 dollars per week. Three thousand tons of apricots, peaches, nectarines, prunes, and raisins were dried, and as much as 37,000 dollars worth of dried fruit was sent out in a single day. As the depression which set in in 1893 caused low prices for dried fruit, and as freight rates to the East were high, the Leslie dryer failed to open for the 1894 season. There is no evidence to indicate a connection between the nation-wide railway strike of 1894 and the

¹Charles Dudley Warner, "Our Italy," Harper's New Monthly Magazine, LXXXI (November, 1890), 820-824.

failure of the Leslie dryer to open, but as the strike and the drying season coincided, a connection seems probable. While it operated, this dryer had provided a market for the fruit of Duarte's deciduous orchards. In March, 1894, a branch of Coxey's Army, organized in Los Angeles to join similar armies in a depression march on Washington, moved eastward and camped three hundred strong in the cutting sheds of the Leslie dryer. Thereafter these sheds were unused and within a decade disappeared from the landscape. The railway siding constructed for the Leslie Fruit Company, however, is still in use.

Notwithstanding the depressed condition of the Los Angeles area immediately after the boom of the eighties, new settlers continued coming and by the end of 1893, the Santa Fe was hauling more household goods westward than at any time since the height of the boom. Then, just as a reaction from the local post-boom slump was well under way, the disastrous financial collapse of 1893 swept the nation. Wages fell and unemployment grew. In the fall and winter of 1893 many unemployed men came to the Los Angeles region to escape the Eastern winter, adding to local problems. A three-year drought succeeded the nation-wide depression, prolonging it locally. Under such a combination of circumstances, there were few major occupancy changes on the Duarte rancho.

Water and Occupancy in the Years of Field Crops and Horticultural Experiments

A dependable supply of water was essential to the expanding horticulture of the Duarte rancho. Andrés Duarte had appropriated half of the water of the San Gabriel River, but had assigned half of his water right to the land ultimately acquired by Beardslee. As Beardslee sold portions of his land, he conveyed also the right to use his ditch and a portion of the water it conveyed. Soon the purchasers of Beardslee land were obliged to co-operate in cleaning and repairing the ditch and in deciding upon an irrigation schedule. From such co-operation there arose the Beardslee Water Ditch Company. As Weill, successor to the remaining water right of Andrés Duarte, sold tracts of land with water rights, purchasers of his land also united to improve facilities for receiving and distributing water, giving rise to the Duarte Mutual Irrigation and Canal Company. Soon the two companies were chartered by the state as mutual corporations. For some years their service areas overlapped, but in time their respective service areas became more clearly

defined, assuming the pattern pictured by Figure 7. The right to water from these companies was and is contingent upon the ownership of stock, and does not appertain to the land.

The dry year of 1876-1877 emphasized the need for improved facilities for delivering water to the Duarte rancho. In the summer after that dry winter, water was so scarce that the Beardslee Water Ditch Company's zanjero turned all available into the zanja leading southward from 5:00 to 7:00 a.m. and into the one leading westward from 7:00 to 9:00 a.m. to permit users to fill their ollas, barrels, tanks, and horse troughs. The Duarte Mutual Irrigation and Canal Company likewise had to send an undivided stream if water was to reach its stockholders. To help obviate such shortages in the future, the stockholders of these mutual companies voted in 1881 to improve their water flow by building jointly a rock ditch from the division box at the mouth of the canyon to the east bank of the river, whence they would later lay a steel pipe under the river to carry their water westward. The two companies then had equal rights to water from the San Gabriel, but the Beardslee Water Ditch Company, unable to pay its half of the cost of the rock ditch, voted to let the "Upper Company" have the right to one-third of its water in return for paying all expenses of constructing the water-saving rock ditch. This concession is significant today when the two companies are in process of consolidation, for since the Duarte Mutual Irrigation and Canal Company has two-thirds and the Beardslee Company one-third of the stream flow allocated west-side users, the shares of stock of the two companies have a different exchange rate for shares in the new Duarte Mutual Water Company.

Throughout the eighties when population was increasing and horticulture expanding on both sides of the river, threats to established water rights were acute. In 1882 a company which was subdividing land in the Covina district ran tunnels and built cement ditches in the San Gabriel Canyon for the diversion of water toward its property. It filed claims to 5,000 inches of water originating above the diversions to Azusa and Duarte, thus jeopardizing irrigation in those pioneer communities and causing them temporarily to forget their own "water wars" in uniting to face a common threat. But their quarrels soon broke out anew. In the drought of 1883 water could not be coaxed in a dry ditch to all parts of the Azusa settlement. According to Duarte pioneers, they agreed to let the more populous Azusa settlement have all the stream flow for two

days during the emergency, and they would take all of it on the third day. This arrangement induced litigation in which the court held that, since Duarte users had consented to such a division, Azusa users had acquired the right to two-thirds of the stream flow.

After seven years of disputes between users of water from the San Gabriel Canyon over their respective rights to water, a compromise agreement was signed by representatives of the nine parties to the conflict and ratified by the courts. Two of the parties to this compromise were Duarte's mutual water companies. This compromise agreement provided that the seven companies on the east side of the river should receive 432/720 of the stream flow, the Covina company 72/720, and the two Duarte companies 216/720. Under the compromise agreement, the San Gabriel River Water Committee or "Committee of Nine," composed of one representative from each of the nine signatories to the agreement, was established to regulate the distribution of water originating in the San Gabriel Canyon and its forks.¹ The assurance that a definite portion of the available water would be equitably allocated brought a sense of security to settlements on both sides of the river and stimulated the extension of horticulture.

The drought of the nineties promoted the utilization of favorably situated spots for storage reservoirs and encouraged the use of underground pipes to replace the wasteful open ditches. In the late nineties the Beardslee Water Ditch Company constructed a storage reservoir of 3,000,000 gallons capacity. This reservoir mitigated the ravages of drought within the company's service area and also obviated the necessity of Sunday and night irrigation. It is located on the north side of the Santa Fe to the east of Mountain Avenue and is still vital for impounding irrigation water released through gravity flow. Under the spur of drought, the Duarte Mutual Irrigation and Canal Company built a concrete reservoir of 4,000,000 gallons capacity at the north end of Buena Vista Avenue. This reservoir, completed in 1902, is also in current use. An outdoor factory in Monrovia made cement pipe and sold thousands

¹This committee now negotiates with the Los Angeles County Flood Control District concerning the storage, conservation, and release of canyon water. It also negotiates with the Los Angeles Metropolitan Water District which acquired junior rights to canyon water through the acquisition of Morris Dam which was built in the lower canyon by the city of Pasadena, now a member of the Metropolitan Water District.

of feet of it to Duarte horticulturists. The increased use of pipe improved the efficiency of water distribution and permitted ditches to disappear from the landscape. The availability of cement¹ facilitated the construction of pipelines, storage reservoirs, and cisterns. Such improved facilities for distributing and impounding water helped preserve the evolving horticultural pattern of the Duarte rancho in the dry years of the nineties and aided the expansion of that pattern in subsequent years of more abundant rainfall.

Citricultural Occupance of the Nineties

New Citrus Varieties

The introduction of new varieties of citrus fruits was a salient factor in causing citriculture to achieve dominance in the horticultural pattern of Duarte and other sections of the upper San Gabriel Valley. A patent need existed early in the citrus history of the area for an orange to be marketed in summer and early fall when no other varieties could compete with it and when high temperatures of Middle Western and Eastern markets would stimulate the demand for juicy fruits. The Valencia orange² filled these needs, and also lengthened the season during which local citrus laborers, packing-house facilities, and the Eastern sales force were employed. Furthermore, this fruit which is picked, packed, and shipped from March or April to October, has the unmatched merit of keeping well on the trees. The first carload of the new variety was shipped from San Gabriel in July, 1887, the fruit netting four dollars per box.³ Such good initial prices, combined

¹The first cement sidewalks were constructed in Los Angeles in 1880. After that year cement was also available for pipe. (Harris Newmark, op. cit., p. 519.)

²The Valencia originated in the Azores, whence it was imported by Thomas Rivers, a London nurseryman, to be grown under glass. It was introduced into California from London and sold as "Rivers Late," but soon was identified with the Spanish variety, la Naranja Tarde de Valencia. Trees of this variety in Florida became known as "Hart's Tardiff" and "Brown," progenies of which were sent to California. The fruitage proved to be of the same variety as the Valencia and were finally so designated. (R. Mabel MacCurdy, The History of the California Fruit Growers Exchange [Los Angeles, 1925], p. 5.)

³This shipment was from trees topworked with buds supposedly from Washington navels. Through a mistake which almost ended in a law suit, the buds were from Valencia trees.

with its other merits, helped make the Valencia the preferred orange variety throughout the San Gabriel Valley. It was first planted in Duarte in the late eighties, and since 1900 has been virtually the only variety planted.

Lemon groves have never been of the areal significance of orange groves on the Duarte rancho. The techniques and costs of curing lemons prior to shipment, the low prices which prevailed in the depressed nineties, and the susceptibility of the lemon to frost damage discouraged the inclusion of more lemon orchards in the horticultural pattern.¹ In the early development of the citrus industry, however, the introduction of new varieties was a spur to lemon planting. The Eureka, originated from seed from Sicilian lemons, was widely planted in the San Gabriel Valley in the eighties. It is now the most widely grown lemon, as it bears early, yields heavily, tends to mature fruit in summer when demand is highest, and stands up well under curing and shipping. Most Duarte lemons are of the Eureka variety, but some are Lisbons, a variety introduced from Australia in 1874. The Lisbon tree, distinguishable from the Eureka by its larger size and more thorny and more upright branches, produces superior fruits, but tends to ripen them in winter when demand is low.

Co-operative Endeavor and Occupance

Marketing before the Nineties.--Citriculture had assumed such proportions in the thinly settled Los Angeles Lowland by the seventies that the local market could not absorb all its yield. Buyers then began to purchase and ship the fruit, paying a stated sum for the crop on the trees and assuming all further marketing responsibility. San Francisco, reached by steamer or sailing ship, took all the surplus until 1876 when the arrival of the first railroad in Los Angeles made wider markets available.² As soon as the

¹In 1895 Duarte lemons yielded the grower half as much per box as oranges. In 1897 lemon shipments were so small that lots were combined to make a carload and yields were so low that shippers had to pay the freight charges.

²The first carload of oranges shipped from California was sent to St. Louis in 1877 from the Wolfskill grove in Los Angeles. It arrived in good condition after a month on the way. The freight on this car of 300 boxes was \$500. In 1881 with competition approaching, the Southern Pacific cut the rate on carload lots to Chicago from \$650 to \$350, allowing a similar reduction to intermediate points. (Webber and Batchelor, op. cit., p. 49.)

Southern Pacific built eastward from Los Angeles, boxed Duarte oranges were hauled to San Gabriel, whence they were shipped to San Francisco. The coming of the Santa Fe to Los Angeles in 1885 furnished another outlet for the fruit. However, during the boom the increase in citrus acreage was so enormous that as the new orchards reached bearing age, marketing the entire fruit crop became a challenging problem. The general practice developed of a buyer's bargaining for a grower's crop, paying for it at a stated price per packed box, and doing the packing and shipping. Much dissatisfaction arose because the buyer was sole judge of what fruit was merchantable, hence other selling methods were devised. Some growers shipped their fruit to commission men in San Francisco or in the East, but as there was no agreement among middlemen as to the distribution of fruit to various buying areas, glutting and undersupply resulted. Methods of handling the fruit were primitive, for no standardized techniques of picking, hauling, packing, or shipping had yet evolved.

From 1885 when shipments had mounted to 1,000 carloads per year, marketing conditions became progressively more unbearable. At a meeting of frantic growers in Los Angeles in October, 1885, at which Duarte growers were represented, delegates agreed that, unless united action were taken for improving sales methods, they would lose their property. Thereupon they organized the Orange Growers Protective Union of Southern California, and named an executive committee to sell their fruit and regulate and distribute sales. During the season of 1885-1886 the Union shipped to the commission firms it chose as agents a total of 1,969 cars, besides 281 carloads it sold at home or shipped by express.¹ After an existence of several years, the promising Union succumbed, due to new unaffiliated acreage and to the persistent opposition of commission men and buyers who could make larger profits by dealing with growers individually. Nevertheless, other attempts, chiefly by desperate local groups, were made to organize the chaotic industry and preserve citriculture.

Marketing in the Nineties.--The soaring orange acreage accounted for the shipment of 3,476 cars of California oranges in the season of 1889-1890.² To the difficulty of supplies too large

¹MacCurdy, op. cit., p. 11.

²Nephtune Fogelberg and A. W. McKay, The Citrus Industry and the California Fruit Growers Exchange System (Washington, 1940), p. 13.

for profitable prices were added problems of slow transportation, poor refrigeration, and long distances to consuming markets. The ventilated refrigerator car for moving perishable products was still in its infancy and the railroads did not yet move citrus cars in through trains. At the opening of the season of 1891, the middlemen would buy no more fruit f.o.b. under existing speculative conditions, but would ship only on consignment, the grower assuming all risks and underwriting any deficits. When the producer thus furnished the capital and the distributor assumed no risk, the incentive for careful marketing was destroyed. Shipments went forward recklessly, demoralizing markets and returning losses to many producers. Soon the widespread depression and the railroad strike made marketing conditions still more chaotic. In these "red-ink years" of the early nineties, Duarte orchardists were forced either to accept whatever offer the local speculators made, or to consign their fruit to commission houses in the East to which citrus fruits were merely incidental business. Their desperation culminated in most of them uniting for common action.¹ Early in 1893 Monrovia growers, whose orchards were then coming into bearing, joined with a larger number of Duarte growers in a series of meetings at the Duarte school out of which the Duarte-Monrovia Fruit Exchange developed. The directors of the new organization passed the following resolution:

The purposes for which this corporation is formed are to pick, pack, ship, and market the fruits of the stockholders, collect and distribute to them their due share of the proceeds of sales, purchase needed materials, and transact all business necessary for carrying out successfully the above objectives.²

When plans were drafted in Los Angeles in August, 1893, for the formation of the Southern California Fruit Exchange, the Duarte-Monrovia Fruit Exchange was represented. In the fall when

¹ Attempts had been made to establish co-operative marketing organizations in Duarte prior to the "red-ink years" of the nineties. A "Fruit Grower's Union" was in existence during the period of the Orange Growers Protective Union of Southern California, of which it was probably a member. There are no known records of this Union nor of the Duarte Fruit Exchange which also had a short existence. In about 1890 the Duarte Company, "Growers and Shippers of Fine Oranges and Lemons," was organized by growers in the foothill section. It built up considerable business under its own brands during its short life. When it disbanded, most of its members joined the Duarte-Monrovia Fruit Exchange.

² Minutes of Meetings of Directors of the Duarte-Monrovia Fruit Exchange, November 4, 1893. This item is reproduced by permission of The Huntington Library, San Marino, California, which has the early records of the Duarte-Monrovia Fruit Exchange.

seven local exchanges formally banded together in that pioneer co-operative marketing organization,¹ the Duarte-Monrovia Fruit Exchange was one of the seven. The Southern California Fruit Exchange made a successful start in classifying fruit by grade, improving returns from sales, and reducing marketing costs. Nevertheless, the oranges it marketed declined from 4,190 carloads or 89.4 per cent of the crop of 1894-1895 to 2,574 cars or 36.7 per cent for the season of 1895-1896.² It did not handle a higher percentage of the output because of a variety of adverse influences. Undermining influences included the strenuous and wily opposition of established dealers, development of new and unorganized citrus areas, lack of marketing experience of Exchange officials, inadequate inter-exchange information about shipments, delays in transit, and individualistic practices. Despite disrupting difficulties, however, the loyalty and confidence of enough local exchanges held firm for the Southern California Fruit Exchange to remain intact.³ Through its stabilizing influences on marketing, the Exchange exerted a steadying effect on citricultural occupation.

The Duarte-Monrovia Fruit Exchange rented a private packing house for the first two years of its existence and then built a large frame house on the Southern Pacific just west of the depot in the townsite, the railway paying 900 dollars toward its costs. About the same time the Santa Fe built a packing house on the west side of Buena Vista Avenue and gave the local exchange free use of it. These packing houses required an investment in machinery and equipment, and the organization bought its first mechanical graders. The grader at the "upper house" was run by water power, but that at the "lower house" was operated by Duarte's first gasoline

¹Local exchanges which united to form the Southern California Fruit Exchange were the Semi-Tropic Fruit Exchange of Los Angeles, the San Bernardino County Fruit Exchange, Riverside Fruit Exchange, Orange County Fruit Exchange, San Diego County Fruit Exchange, and the San Antonio Fruit Exchange of Pomona, besides the Duarte-Monrovia Fruit Exchange. (MacCurdy, op. cit., p. 29.)

²Fogelberg and McKay, op. cit., pp. 16-17.

³When the strength of the Southern California Fruit Exchange was ebbing, the Board of Directors of the Duarte-Monrovia Fruit Exchange voted: "RESOLVED: That we learn with deep regret of the withdrawal of any of the local Exchanges from the Southern California Fruit Exchange, and we hereby pledge our full and most hearty support to maintenance of the Southern California Fruit Exchange for the coming season." (Minutes, loc. cit.) Such loyalty saved the central organization which later became a model for other co-operative selling organizations.

engine. The grading of fruit according to size and quality was a factor in the improved marketing induced by the Southern California Fruit Exchange. Better marketing stimulated the retention and expansion of citriculture.

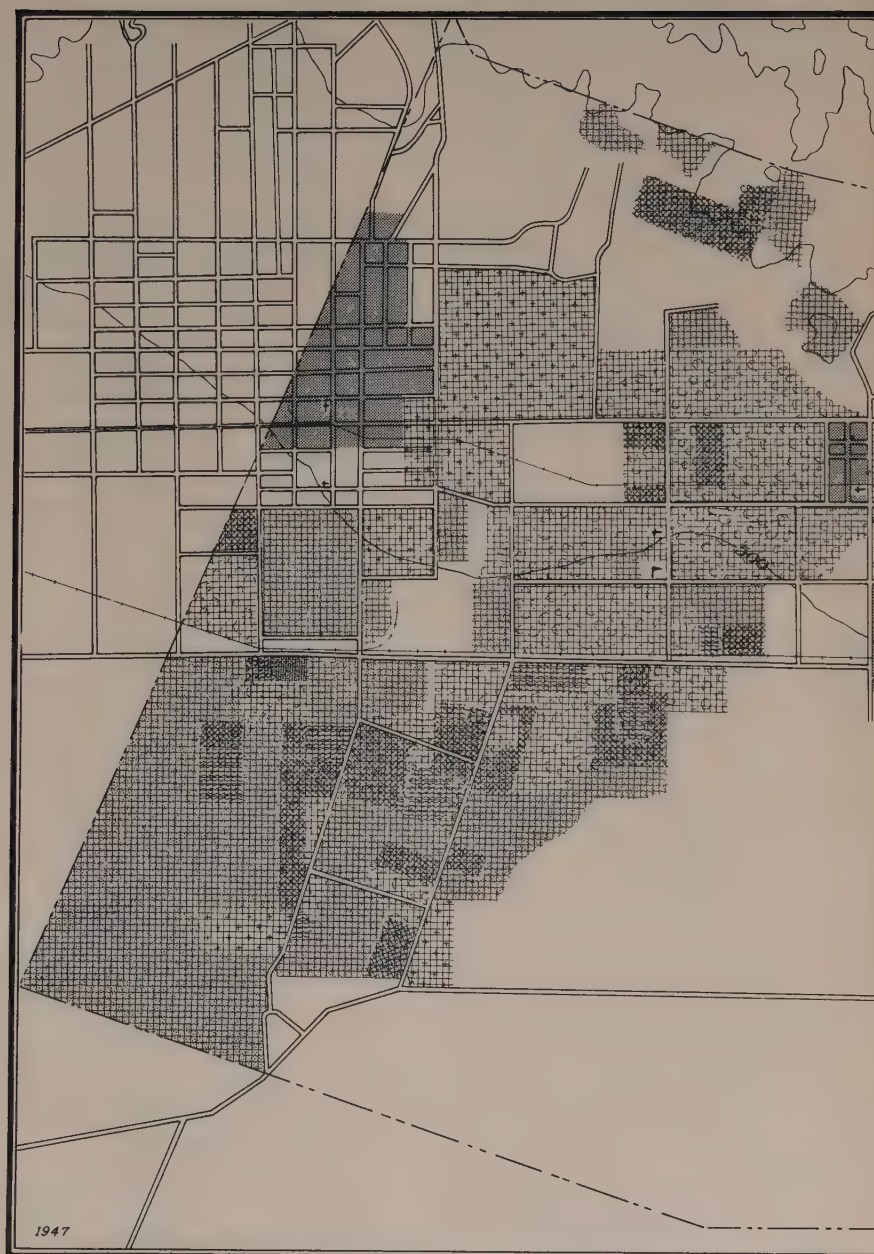
Insect Pests

The conquest of the cottony cushion scale did not end threats to citricultural occupancy from insect pests. By 1895, most groves were infested with black scale. It then became necessary to wash the fruit on which scale had left black smut and to brush fruit less seriously affected. Washed fruit was at first considered so inferior to that which had been brushed that it was not allowed in the same shipping pool with it, but as black scale multiplied, washing fruit became the general practice. By 1896 red scale, a new pest, was infesting many groves. The larger orchards were fumigated, but there was trouble persuading owners of small ones to incur the heavy annual expense of keeping their own orchards free of damaging pests and protecting neighboring orchards from infestation. Out of such difficulties county and state inspection for insect pests developed. In 1898 the directors of the Duarte-Monrovia Fruit Exchange asked the manager to write to California's representatives in Washington, urging their support for a bill forbidding the importation of goods infested with scale insects. By 1900, pest control was considered second only to irrigation among citricultural practices.

Occupancy of the Rancho Azusa de Duarte in 1897

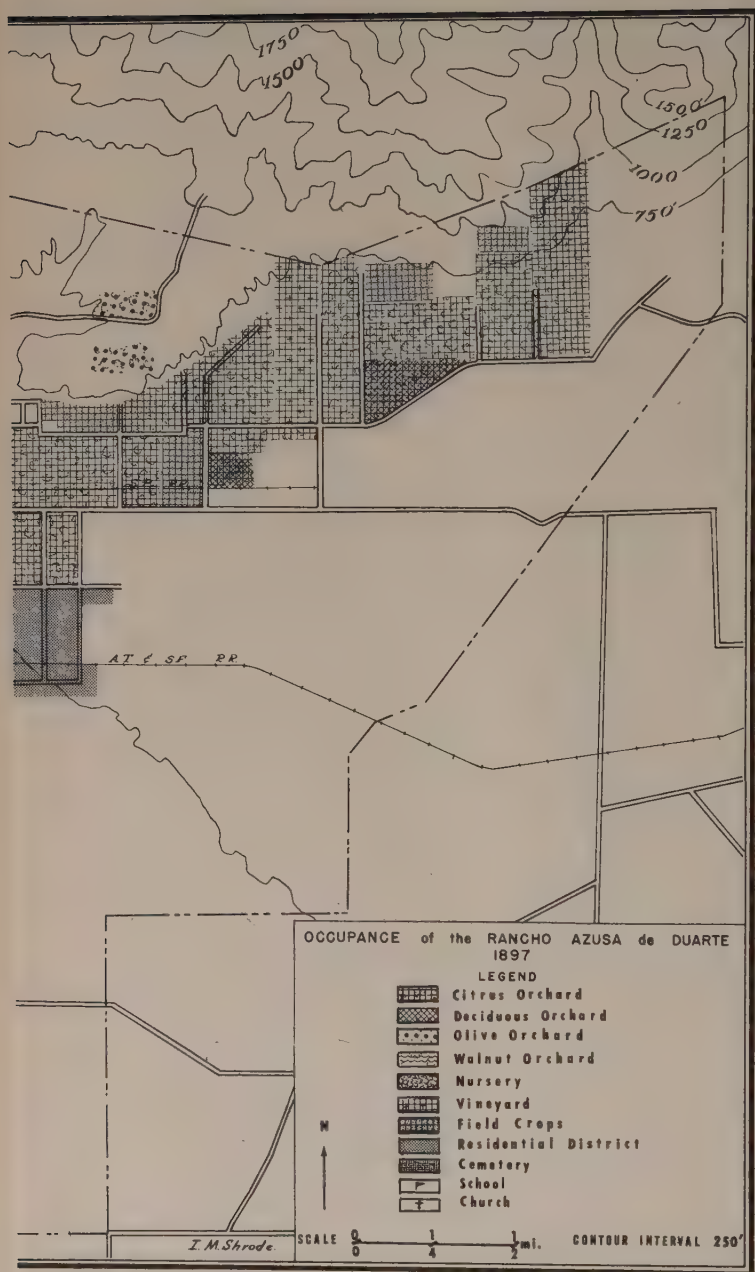
Functional Areas

The functional areas of the Duarte rancho in 1897 are shown by Figure 15. A comparison of this map with Figure 14, which suggests the extent and distribution of crop land in 1872, reveals that during the intervening quarter-century crops had spread over most of the rancho's agricultural soils (Fig. 6). This comparison reveals also an advance of residential occupancy, particularly in the northwest section which had been absorbed into Monrovia. To a lesser degree, residential occupancy had spread in the Duarte townsite and in the Davis Addition. In the twenty-five year period the old roads had been straightened, many new ones created, and two railroads had come. Neither in 1872 nor in 1897 was any use made of riverwash lands in the east and southeast of the rancho.



1947

FIGURE 15



Several occupance features of areal insignificance but of major significance to the functioning of the community appeared on the rancho between 1872 and 1897. The Protestant groups had taken turns using the school building for their church services, but in 1884 the Baptists built a church on Buena Vista Avenue a few hundred feet north of the school grounds. At first they shared their building with the Southern Methodists, who had organized a congregation in 1876, but in two years they sold their church to the Southern Methodists and moved to the new town of Monrovia where their congregation was given three lots and financial encouragement in constructing a larger church. The primitive school buildings erected in the seventies were replaced in the early eighties by a substantial two-story frame building. By the time the boom was bringing in new settlers, the new school building was ready for school and community use. Between the school and the church was the blacksmith shop--a vital cog in the functioning of the community as long as horses, horse-drawn implements, wagons, carts, and buggies were agents in the maintenance of its functional areas.

The school, the church, and the blacksmith shop tended to focus some of the community interests on Buena Vista Avenue, even after the rise of Monrovia. Another focus lay a quarter of a mile down this road where it is intersected by Duarte Road and the Santa Fe. On the northeast side of this intersection was the Santa Fe station where the carrier delivered and picked up mail sacks and where passengers bound to and from Los Angeles met. On the west side of this intersection was the packing house of the Duarte-Monrovia Fruit Exchange to which oranges from the south part of the rancho were hauled. Duarte, which has always lacked a strongly defined community center, had another focus of activities to the northeast in the Duarte townsite (Fig. 4). There in 1897 several plots were devoted to occupance features denoting community service. The general store and post office occupied a building on the southwest of the junction of streets now known as Foothill Boulevard and Fish Canyon Road. Along the Southern Pacific, which intersected the townsite, was the depot and the larger of the two packing houses of the Duarte-Monrovia Fruit Exchange. In the south part of the townsite a little stone Episcopal church had just been built by a group of English families who had established orange ranches near the foothills. Falling Leaf Avenue, the dusty road on the south side of the townsite, gave no evidence in 1897 that within a decade it would be Huntington Drive and

thereafter become a United States highway over which thousands of automobiles move daily (Table 11).

Contrasts between Duarte and Colony Occupance

In 1897, as today, occupance of the Rancho Azusa de Duarte was representative of that of the upper San Gabriel Valley. However, certain aspects of its land-use pattern of fifty years ago were in contrast with those of citrus-growing communities like Ontario and Redlands which had developed from colonies. Such colonies had been laid out as planned communities in advance of the sale and settlement of acreage units. Most of their original settlers, many of whom had not been farmers, came from the same region and had a comparatively common background. The communities they peopled had an areal and social homogeneity lacking in Duarte, which developed as a result of individual initiative rather than from colony planning. Although most of Duarte's settlers before 1880 had come from Texas, by the end of the century the rancho's population represented many regions of the United States, as well as several foreign countries. It then had in the Davis Addition a section populated by Negroes and Mexicans, an areal feature lacking in the planned communities. The road grid, commercial center, churches, schools, and good houses of a colony preceded producing orange groves, whereas in Duarte these landscape features developed in response to demonstrated needs. With certain beautiful exceptions, most Duarte houses in 1897 were ordinary rural homes, but the colony houses from the first had the appearance of superior suburban residences.

CHAPTER V

OCCUPANCE OF THE DUARTE RANCHO IN THE PERIOD OF CITRICULTURAL DOMINANCE (1901-1947)

Occupance in the Years of Horticultural Adjustments (1901-1914)

Disappearance of Vineyards

In Duarte at the turn of the century, as elsewhere in the less urbanized sections of the upper San Gabriel Valley, the landscape bespoke increasing emphasis upon commercial horticulture. Viticultural occupance still existed, but was of dwindling areal significance. The dread European phylloxera and the "Anaheim disease"¹ had caused the uprooting or abandonment of some vines, but in 1901 a few wagon loads of grapes were still hauled after the autumn harvest to Sunny Slope or to the Baldwin winery on the Rancho Santa Anita. Gradually, however, most Duarte vines disappeared to make way for more profitable crops.

The Disappearance of Deciduous Orchards

Mixed subsistence orchards, long important for furnishing homes with fruit, were giving way to commercial orchards before the turn of the century. Commercial deciduous orchards had reached their peak acreage in the early nineties and thereafter were gradually supplanted by Valencia oranges. Orchards of apricot, peach, and prune trees had been favored because growers appreciated the security of a variety of crops and the advantage of spreading their labor needs over a longer period than was possible with a single deciduous fruit. They appreciated also the advantage of trees which came into bearing in half the time re-

¹Phylloxera had been identified in California in 1875, though present earlier. It was less disastrous than in France, perhaps because of the tendency of a new country toward frequent changes in crops and certainly because of the benefit of European experience. The Anaheim disease, now known as Pierce's disease, has been less aggressive since its destructive ravages of sixty years ago.

quired for oranges, yet they uprooted their deciduous orchards. Several factors helped induce this shift, one of which was unfavorable marketing conditions.

Prices of dried fruit were so low in 1901 that the Duarte Deciduous Association rented an Exchange packing house to store its dried fruit while awaiting higher prices--which failed to appear. Most of its members were also orange growers, and as they expanded their orange acreage at the expense of deciduous orchards, the Duarte Deciduous Association went out of business. All remaining deciduous growers of the community thereafter processed their own fruit or arranged with neighbors to dry it. Dealings with fruit buyers became increasingly unsatisfactory, the price offered for dried apricots falling even below four cents per pound. There were no local canneries to buy the fruit, but some was hauled or shipped by rail to a Los Angeles cannery, and some was sent to a cannery in the San Fernando Valley. As the seller assumed all losses for spoilage and as prices were low, distant canneries were unsatisfactory outlets for Duarte's deciduous fruits.

By the time World War I broke out, there were no commercial deciduous orchards left on the Duarte rancho, but low prices, chaotic marketing, and competition with orange groves were not the only causes of their disappearance. Competition with new deciduous areas in the Santa Clara and Central Valleys was mounting. In some years there was insufficient labor at the season's peak at wages low enough to assure a profit. Furthermore, the deciduous trees often bore light crops. The apricot, Duarte's favorite deciduous tree, proved a rapid grower which required little irrigation, yet it was subject to maladies. Some trees were affected by a crown gall which reduced crops. In some years the crop was light because of inadequate winter chilling, a condition not then understood but since thoroughly investigated.

In nearly all sections of California where fruit is grown extensively, the amount of winter chilling is too small for buds to open as quickly or as evenly when spring weather begins as they would in sections with longer, colder winters. This delay is not often injurious north of the Tehachapi Mountains, except in a few areas near the coast. It tends to be beneficial; for delay in opening of the buds tends to reduce the frost hazard.

In some sections south of Tehachapi, however, the effects of the warmest winters are very injurious. Fruit buds and buds that should open in March may not open until May or June,

and then only a small percentage may open. Most of the flowers may fail to set fruit.¹

Influence of the Exchange on Expanding Citricultural Occupance

The Southern California Fruit Exchange gradually systematized marketing, tending thereby to stabilize the citrus industry and the distinctive occupance upon which the industry depends. The rise in Duarte shipments shown by Table 8 illustrates the general upward trend in orange shipments. Without vigorous marketing, such an increase would have created a dangerous surplus. After its decline in the nineties, the Exchange grew stronger until in 1903 it controlled 43 per cent of California's citrus shipments. In that year shipments were heavy, delays in transit long, and markets demoralized. As a result, the Exchange united with the principal commercial shippers in a single selling agency, the California Fruit Agency. This organization met some success in relieving the immediate situation, but the inherently diverse interests of commercial and co-operative shippers, poor returns, and other factors doomed it to failure. In 1905 the Southern California Fruit Exchange, because of the rising citrus areas in the Central Valley, became the California Fruit Growers Exchange to have a name more representative of its activities. Even then and thereafter, however, the future of the Exchange was uncertain because of low fruit prices and an irregular and fluctuating membership.

Departments of the Exchange.--Though all departments of the Exchange are adjuncts to its Sales Department, their work ramifies in various directions. In 1905 investigations of the Exchange led to the discovery that the decay that was cutting returns from citrus fruits was caused by a blue-mold fungus and that this fungus entered a fruit through mechanical injuries to its skin, due chiefly to such avoidable causes as clipper cuts, stem punctures, scratches, and bruises. Thereafter the Exchange required the use of picking gloves, better clippers, and improved picking sacks. It insisted that fruit be hauled only in wagons with approved springs, and it sponsored the installation of

¹W. H. Chandler et al., "Chilling Requirements for Opening of Buds on Deciduous Orchard Trees and Some Other Plants in California," Bulletin 661, Agricultural Experiment Station, University of California (Berkeley, 1937), p. 63.

TABLE 8

SEVEN-YEAR RECORD OF CARLOADS OF ORANGES
SHIPPED FROM DUARTE^a

Shipper	Season						
	1904-5	1905-6	1906-7	1907-8	1908-9	1909-10	1910-11
Exchange	418	293	436	320	600	600	725
Independents	?	?	150	150	200	200	210

^aCompiled from reports of the manager of the Duarte-Monrovia Fruit Exchange. The manager reported that 90 per cent of the fruit handled came from the Duarte grant.

packing-house machinery designed to handle fruit without injury. Such work led to the establishment of a Field Department. Other departments also evolved to give services otherwise unavailable to individual growers. Before the establishment of the Traffic Department, each individual packing house was likely to have difficulty getting cars. Thus, in January, 1901, when the shipping season for navel oranges was getting under way, the manager of the Duarte-Monrovia Fruit Exchange wrote to the Southern Pacific's traffic manager:

We have 400 boxes of oranges ready to load and by the end of the day will have at least 700, but we have no cars for loading.¹

In March when navel oranges were falling from the trees at an alarming rate, he wrote:

Some growers with 2,000 to 5,000 boxes say they will not have any left to pick in ten days. Yesterday we had one car on the Santa Fe and today none. We have a capacity of 30 to 35 cars per week and need to operate at capacity for the next three weeks.²

In 1910 a Traffic Department was established by the Exchange to handle such relations with the railroads and to assure shippers a prompt supply of refrigerator cars. This department routes cars, files claims, secures payment for damages, and negotiates with the railroads on changes in tariffs. It has been responsible for many improvements in the ventilated refrigerator cars which transport California's citrus fruits to distant markets. As the

¹Quoted by permission of the Huntington Library, San Marino, California, from the letter file of the Duarte-Monrovia Fruit Exchange.

²Ibid.

work of "Central" expanded, it established a Legal Department and an Auditing Departments. These various departments have furnished local exchanges with many benefits which helped stabilize citricultural occurance.

Subsidiaries of the Exchange.--An important step in maintaining and extending citriculture in the Los Angeles Lowland was the creation in 1907 of the Fruit Growers Supply Company. The purpose of this Exchange subsidiary was to furnish growers at cost such supplies for growing, picking, packing, and shipping fruit as insecticides, fungicides, fertilizers, shoo, nails, and wraps. To be assured an adequate supply of shoo in the timberless citrus belts, the Supply Company went into the lumber business in the northern counties of the state.¹ Another subsidiary, the Exchange Products Company, was organized in 1915 to manufacture by-products from cull or surplus fruit. After a costly experiment with marmalade, the company was reorganized and now makes such diverse by-products as pectin and cattle feed. Its absorption of low-grade and surplus fruit has been an important factor in marketing.

Advertising.--Of all the manifold activities of the Exchange which promoted citriculture in the early years of the twentieth century, national advertising was probably most influential. After successful test advertising in 1907,² an Advertising Department was created which set out to whet the national appetite for oranges and to implant the name "Sunkist" in the national vocabulary as a synonym for high-quality Exchange fruit. Advertising led the Exchange into such work with consumers, jobbers, and the retail trade as the distribution of juice extractors and glass reamers. As the orange moved from a luxury for festive occasions into the realm of staples, advertising helped make citriculture Duarte's most distinctive type of land use. Such occurance bespoke the substitution of fresh fruit for heavier foods in the diet of millions of Americans.

¹The San Francisco fire following the earthquake of 1906 was responsible for the founding of the Supply Company, for it created such a demand for lumber for rebuilding the city that securing any for fruit boxes was impossible. (C. C. Teague, Fifty Years a Rancher [Los Angeles, 1944], p. 89.)

²Iowa was chosen as the representative state in which to experiment with citrus advertising. While the increase in the country as a whole was 17.7 per cent, the Exchange trade with Iowa gained 50 per cent. (R. Mabel MacCurdy, The History of the California Fruit Growers Exchange [Los Angeles, 1925], pp. 59-64.)

Technical Developments Affecting Citricultural Occupance

Orchard Practices.--Studies in irrigation efficiency induces some changes in irrigation practices. Whereas in 1901 basin irrigation was general throughout Duarte, by 1914 furrows were beginning to supplant basins and overhead irrigation systems were being introduced into a few groves. Clean cultivation still prevailed, and the pruned, compact orchards gave a neat appearance to the landscape.

Pest Control.--The sciences of entomology and chemistry were called upon to combat a baffling array of insect pests. The County Horticultural Commission inaugurated plant inspections and embargoes to prevent the migration of dangerous pests. The Duarte-Monrovia Fruit Exchange denied owners of contaminated groves the use of its picking boxes in the hope of checking the spread of troublesome insects to groves where pest control was practiced. Fumigation with potassium cyanide was the prevailing method of eliminating insect pests. Once a year the trees were covered at night with tents under which the lethal dosage was released. Although improvements in fumigants and fumigating techniques were made, considerable damage to trees sometimes occurred because irresponsible laborers failed to co-ordinate their work with favorable conditions of temperature and humidity. Furthermore, some insect pests were found to develop a puzzling resistance to fumigants. By 1914 a slight decline in fumigation as the exclusive method of pest control was apparent and a corresponding rise in spraying had begun.

Orchard Heating.--Of all the technical advances which helped protect and perpetuate citricultural occupance on the Duarte rancho, orchard heating has been one of the most significant. As Table 3 reveals, the average winter temperatures of the upper San Gabriel Valley as represented by Azusa are safe for citrus fruits, but the absolute minimums are destructive. Before the period of horticultural adjustments (1901-1914), orchard and fruit thermometers had been unknown, but with the rise of orchard heating, growers had to learn about dangerous temperatures and their relation to wind drift, dew point, and atmospheric humidity. Experience soon revealed that the orange can endure an atmospheric temperature as low as 26° Fahrenheit for an hour or more under favorable conditions, but that the lemon freezes if the atmosphere is

colder than 28°. On the Duarte rancho, as throughout the San Gabriel Piedmont, the general rule was recognized that the higher the ground, the less the frost danger, but in some cold waves the expected temperature inversions failed to materialize. Since Duarte citrus groves are on ground as high above the sea as 800 feet in the foothill district and as low as 375 feet in the southwest, frost damage in some cold winters has varied widely.

The years from 1901 to 1913 contained an abnormally high number of cold winters which unwittingly prepared growers for the record-breaking freeze of 1913. In 1901 a November freeze killed several orchards newly planted on low ground. Damage was again considerable in 1902, and a few discouraged growers in the southwest planted frost-resistant English walnut trees. In 1909 a freeze damaged the crop in most orchards south of Huntington Drive and stimulated the search for equipment with which to heat orchards. In Riverside, wire baskets filled with kindling and soft coal had been used to protect some groves as early as the nineties, and the small amount of heat similar basket heaters generated had saved the lemon crop of the Limoneira groves in Ventura County in 1898.¹ In 1910 there was again frost damage in Duarte, this time extending as far north as the Foothill Boulevard. Pails filled with distillate helped save the fruit in some areas, and desperate growers began to acquire "smudge pots,"² storage tanks or cisterns for storing heater oil, and tank wagons for distributing it. At the conclusion of the Valencia shipments in August, 1911, the manager of the Duarte-Monrovia Fruit Exchange summarized the work of the year by reporting, "This season we had the largest shipments and largest returns in history."³ In November, 1911, he ordered a car of residuum from a petroleum refinery for use in orchard heating, and growers with electric connections began the installation of electric frost alarms. In December a freeze occurred, but the new practice of orchard heating saved some crops, although it spread oily soot into the innermost parts of houses because of the low grade of oil burned and the lack of chimneys and dampers on

¹Teague, op. cit., p. 48.

²During the first years of orchard heating, it was widely held that smoke from heaters helped keep temperatures up. It is now generally believed that the smoke is a mere nuisance and that benefit from heaters comes solely from the heat they generate.

³Letter File, loc. cit.

the open "lard-pail" heaters. The following month, January, 1912, another cold wave occurred which damaged even the foothill section when an unofficial minimum of 21° F. was recorded on low ground. Orchard heating was not universal and only half of the heated groves were completely protected. Growers then learned that to be successful, orchard heating must be thorough. In March the Exchange bought a water separator newly developed by a Riverside grower. By the use of this device, which separated badly frosted from undamaged fruit on the basis of weight, many growers were able to realize something from their crops. The efficacy of orchard heating had been demonstrated, and the manager wrote on March 20, 1912:

The Captain Johnson ranch was always a place where we looked for trouble, but they smudged it this year with the result that it is practically free from frost damage. The place adjoining it on the north is probably all of 90 per cent badly damaged. The frost has reached out into ground so high we thought impossible to damage.¹

With the efficacy of orchard heating thus demonstrated, the Exchange manager ordered 40,000 heaters from the Fruit Growers Supply Company for distribution to local groves.²

Early in January, 1913, the most severe and prolonged freeze in the horticultural history of the Los Angeles Lowland occurred, but many Duarte growers met it with their new smudge pots. They had much to learn about the temperature and humidity at which the heaters should be lighted and wasted oil by firing earlier than necessary. Nevertheless, they saved much fruit and what was partly damaged was culled by the water separators, though their separated fruit could not be shipped under the Sunkist label. Growers learned that their heaters were too small to burn through the night without refilling and that in a major cold wave, they needed one heater per tree. Everyone connected with saving the crop was exhausted, but few trees were permanently damaged and citriculture occupation was saved. Furthermore, those who saved their crop received good prices because of the short supply resulting from widespread damage.

¹*Ibid.* The Johnson ranch was in the central part of the Duarte rancho, extending from Central Avenue southward to the Santa Fe. As part of it was in lemons, trouble could be expected from cold waves.

²*Ibid.* Twenty-thousand of these heaters cost growers 39½ cents each in 1912, and 20,000 of the two-gallon "lard-bucket" heaters cost 22 cents each. Most heaters now used hold nine gallons of oil and cost over ten times as much as in 1912.

Labor and Occupance

The maintenance of citricultural occupance requires a dependable though seasonal labor force. As early as 1897 the directors of the Duarte-Monrovia Fruit Exchange had urged that

. . . more of our home people should be initiated into the art of packing fruit to avoid the necessity of sending away for help.¹

Much of the packing was done then, as now, as piece-work by local women, and picking was done by local men, chiefly Mexicans. With the rise of citriculture in Tulare County where the crop is in transit before Christmas, an annual migration of fruit workers began between the San Joaquin Valley and the Los Angeles Lowland, making more workers available for harvesting and packing Duarte oranges. However, until the automobile made it feasible for the workers to drive to their jobs from a distance, a shortage of housing in Duarte and Monrovia affected the availability of these migrants. In 1906 the local Exchange abandoned its packing house on the Santa Fe near the Duarte station and moved its equipment to a more modern plant one mile west near the Monrovia station. The new house, a convenience to many growers, added to the difficulty of shifting employees between the two packing houses, for it was three miles from the larger house on the Southern Pacific in the Duarte townsite. When there was a dearth of pickers in 1906 and Japanese immigrants were coming into California, the desperate directors of the Duarte-Monrovia Fruit Exchange voted:

If the foreman cannot employ enough other help to meet assignments of fruit to be picked, he is to employ a gang of Japanese or as many as needed to keep up with the assignments.²

The next year, however, a national panic occurred and there was ample local help to pick and pack the fruit.³ After the "big freeze" of 1913, there was a surplus of citrus workers, despite deep cuts in their salaries and wages.⁴ In 1914 when the adoption by the state of a universal eight-hour day seemed imminent, Duarte growers violently opposed the enactment of a law they contended would ruin citriculture because of its dependence upon seasonal labor for handling a perishable product.⁵

Non-Citricultural Horticultural Occupance

Walnut Orchards.--Orchards of English walnut trees were significant segments of the areal pattern of southwest Duarte

¹Ibid.²Ibid.³Ibid.⁴Ibid.⁵Ibid.

before 1901. The largest of the early plantings was a forty-acre orchard around the Beardslee adobe. Several smaller orchards were set out on land where young orange trees had been killed by the early freeze of November, 1901, although on two of these properties orange trees were again planted after the development of orchard heating. Although walnuts had the advantage of frost resistance, their average return per acre was less than from oranges. Walnuts required less labor than oranges except during the harvest season, when they required far more. Mexican families usually picked the crop, the men shaking the trees with long poles and the women and children picking the nuts from the ground. Most Duarte walnuts were marketed through an El Monte packing house operated as a unit of the California Walnut Growers Association. Like the California Fruit Growers Exchange, this co-operative organization helped to stabilize horticulture by relieving individual growers of marketing responsibilities.

Avocado Orchards.--Avocados of both Mexican and Guatemalan varieties were introduced into Duarte before 1901, and some varieties were developed in Duarte from seed furnished by the Department of Agriculture. For several years an Altadena nursery grew avocados from seed on a slope formerly in apricots along the north boundary of the rancho, finally leaving the land planted to avocado trees as rental.¹ By the years of the first World War, small orchards of avocados were scattered over the rancho, and the ever-green avocado had become popular as a productive ornamental tree about farmsteads.

Persimmon Orchards.--On some ranches south of Duarte Road small orchards of Hachiya persimmons were set out after 1901. The largest of these--since supplanted by orange trees--consisted of ten acres. One orchard on California Avenue was composed of persimmons interset with oranges, and another of persimmons interset with walnuts. Persimmon trees had the advantages of quick maturity and hardiness, but the disadvantage of requiring skillful and careful picking and packing. The unique labor requirements of this beautiful fruit, the limited appreciation of its non-astringent

¹This avocado grove was uprooted two years ago because superior varieties are now available. The slope is now planted to exotic varieties of hibiscus (Plate III). The Spinks avocado originated on the mesa above Duarte formerly covered with citron trees. The Chappelow variety originated in a small nursery south of Duarte Road on Mountain Avenue from seed furnished by the Department of Agriculture.

character, the areal competition with oranges after the rise of orchard heating, and expanding residential occupance have combined to bring about a reduction in the persimmon acreage of the Duarte rancho.

Olericultural Occupance

As automobiles came into wider use, significant changes in land use occurred in portions of Duarte. In the southwest a tract of 250 acres owned by the Bradbury Estate had been rented for field crops, chief of which was grain hay (Fig. 15). As automobiles increased and horses decreased in number, less and less land was required for hay. An influx of Japanese immigrants was then in progress, and Japanese tenants gradually leased all of the land in the southwest corner of the rancho. The Bradbury Estate drilled a well and sold water to the tenants, who planted the land to vegetables and berries. This olericultural occupance continued in the southwest of the rancho and elsewhere in scattered spots until the evacuation of all persons of Japanese ancestry in the early days of the second World War. Because of California's law which restricts the leasing and ownership of land by Orientals, most Japanese rented their land in the name of their children born in the United States. Because of that law, and perhaps also because of their own background, these tenants made no attempt to develop attractive farmsteads, but lived in unpainted shacks which resembled in many respects the little houses of their native villages. Expensive cars rather than attractive homes bespoke their prosperity.

Declining Local Isolation and Persistent Remoteness

Local Communication and Transportation.--Isolation within the Los Angeles Lowland was reduced during the early years of the twentieth century by extensions in communication and transportation. Although the office of the Exchange had had a telephone since 1896, telephones were not general in Duarte until a local system was established in Monrovia in 1900. Within a few years thereafter, the poles and wires of this company formed a net over the Duarte rancho, furnishing telephones to most ranch homes.

During the early years of the century, the lines of the Pacific Electric Railway began to radiate from Los Angeles to many

sections of the Los Angeles Lowland, helping knit outlying centers into a compact community with its nucleus in the largest city. The Pacific Electric reached Monrovia in 1903, and in 1906 thrust eastward through Duarte to Glendora. So eager were some Duarte residents for this electric line that they donated a right of way and permitted the company to construct unsightly fills and cuts along its route.

Most responsible for reducing isolation within the Los Angeles Lowland was doubtless the privately owned automobile. By the middle of the period of horticultural adjustments, some of the Duarte ranchers owned an automobile and by the end of that period, practically all had one. While automobiles were reducing Duarte's isolation, they were also bringing changes in the use of its land. Fields devoted to hay shrank, though horses and barns remained for a time since tractors were little used until after the first World War. Gradually the spreading barns with lofts for hay, stables for driving horses, and space for carriages disappeared. Garages which replaced the barns made the farmsteads more compact and allowed more space for orchard trees. With the increased use of automobiles, the Chinese vegetable peddler, the butcher's wagon, the pescadero with his long horn, and even most grocery delivery wagons disappeared from Duarte roads, for housewives could shop in Monrovia or some other town. With the rise of the automobile, roads became better. Most were still covered with red foothill clay, but a few of the most traveled ones were macadamized by 1908. Falling Leaf Avenue became Huntington Drive and was widened and paved. As roads were widened, the graceful pepper trees and tall eucalypti which had bordered many of them were cut. With an inter-urban electric line, better roads, and automobiles, the unincorporated part of the Duarte rancho had ceased by the outbreak of the first World War to be an exclusively agricultural settlement and was becoming a suburban residential district within commuting distance of downtown Los Angeles.

Persistent Remoteness and Railway Rates.--Despite improvements in local communication and transportation, the Los Angeles Lowland remained remote from the populous centers of the nation. Railroads and refrigerator cars had helped open orange markets in those distant centers, yet the cost of reaching the markets sometimes absorbed potential profits. Freight rates, though moderated by the rate war of the boom era, were still pegged high, and delivery was often too slow for perishable products. The directors of

the Duarte-Monrovia Fruit Exchange persisted in their efforts to improve transportation and reduce its costs. They heartily endorsed the efforts of President Theodore Roosevelt to strengthen the powers of the Interstate Commerce Commission to lower freight rates. In July, 1905, recognizing the connection between freight rates and stable citricultural occupancy, they resolved:

WHEREAS our local railroads are endeavoring to induce merchants, boards of trade, and other organizations doing business with the railroads to pass resolutions and sign statements against the policy of the President of the United States in the matter of increasing the powers of the Interstate Commerce Commission, therefore be it resolved that all citrus fruit growers in this section be requested to do all in their power to prevent the signing of such statements and the passage of any resolution in favor of the railroad companies.¹

A few months later the directors endorsed a proposed amendment to the Interstate Commerce Act which might ultimately result in lower freight rates on orange shipments, and they urged California's senators and representatives in Washington to support the amendment.²

The outbreak of war in Europe in 1914 tended to offset any immediate benefits which might otherwise have accrued to the Los Angeles Lowland from shipping fruit to the Atlantic seaboard over the long route through the new Panama Canal. The entry of the United States into that war helped bring on a new era of inflated monetary standards which kept freight rates high. Costly freight tariffs continued to emphasize the inherent remoteness of California's citrus belts from the major fruit markets.

Citricultural Occupancy in the Years of Approaching Maturity (1915-1929)

During the years from 1915 to 1929, the principal changes in the occupancy pattern of the arable section of the Rancho Azusa de Duarte took place within the city of Monrovia. The base of the triangle of Duarte land which had been absorbed when the town was incorporated in 1887, had been thrust southward beyond Duarte Road by 1900. After the first World War the city limits were pushed eastward along the north side of the Foothill Boulevard as far as Buena Vista Avenue. The easternmost part of this section remained in orange groves for two more decades, but the west portion of this

¹Minutes, loc. cit., July 11, 1905.

²Ibid., September, 1905.

annexed land changed during the boom of the twenties from an oak grove to a residential district. Between Lemon Avenue and the Pacific Electric tracks an attractive recreational park was developed. Where the Foothill Boulevard turns eastward south of the Catholic church, the factory of the Day and Night Manufacturing Company arose. As the population of Monrovia grew (Table 1), two more public elementary schools and a parochial school arose in the Monrovia portion of the rancho.

Approaching Maturity in Citricultural Occupance

Refinements in Production.--During the years from 1915 to 1929, no major shifts took place in the horticultural pattern of the Duarte rancho. Citriculture dominated the arable land and by 1929 had reached its maximum acreage (Fig. 16). The near equilibrium in occupance indicated the approach--perhaps the achievement--of maturity in land utilization. The techniques of growing and shipping oranges had been mastered, but refinements in those techniques were diligently sought to assure a profit. In the winter of 1921-1922 a moderately serious frost caused damage in many unheated groves, and again in 1924-1925 damage was done. Thereafter throughout the state radio warnings of predicted minimum temperatures became a nightly feature of the frost-fighting program. For two winters in the middle twenties some growers depended on frost insurance to protect their crops, but premiums became so high in later years that reliance was placed in heaters which could save trees as well as crops.¹ Larger and more efficient heaters, equipped with chimneys and dampers, came into general use. Trucks began to supplant wagons for hauling fruit from orchard to packing house and tractors to supplant teams for orchard cultivation. The chemicals and techniques used in spraying for insect pests were bettered, and spraying with oils containing substances toxic to dangerous pests became the most widely used form of pest control. Brown rot, caused by a fungus in the soil, grew serious and a spray was developed to allay it. In 1921 the Duarte-Monrovia Fruit Exchange co-operated with the county and nearby

¹The syndicate which experimented with underwriting citrus crops spread its risks by underwriting sugar cane. To recoup losses suffered simultaneously on Louisiana cane and California oranges, it raised premiums so high that no crop insurance has since been carried by Duarte growers.





RANCHO AZUSA DE DUARTE
1929

exchanges in the establishment of the insectary which is still maintained in Lamanda Park (East Pasadena) for propagating parasites to prey on mealy bugs (Pseudococcus citri) and scale insects.

Exchange Services.--The Duarte-Monrovia Fruit Exchange which handled over three-fourths of the orange shipments from the Duarte grant, and the California Fruit Growers Exchange which marketed over three-fourths of the oranges of the state, extended their services during the years from 1915 to 1929. The local exchange continued stream-lining packing-house operations. A sweating process was developed to color Valencias which, though ripe, looked green. A maturity test, first used in 1915, ascertained when the sugar-content of oranges was high enough to justify picking them. The Central Exchange inaugurated a pro-rate system to make marketing more orderly, thus anticipating the pro-rate system of later years. Growers who employ labor must carry state compensation insurance to protect themselves from liability for injuries sustained by employees, but the cost of this protection was reduced through an Exchange blanket policy. During the first World War there was an acute shortage of labor and the Exchange helped recruit pickers and packers. The advertising of Exchange fruit was extended and intensified. Following the start of orange-juice advertising in 1918 and the development of efficient extracting devices, the practice of eating half an orange for breakfast was widely supplanted by the drinking of juice from several oranges. More than any other single factor, this change in diet has accounted for the rapid subsequent increase in orange consumption and has helped most in the disposition of expanding production.¹ Advertising and the various other Exchange services thus contributed to the stability of citricultural occupation which characterized the period of Duarte's approaching maturity in land use.

Nonagricultural Occupation in the Years 1915-1929

Rock crushers had appeared in the riverwash area of Duarte before the first World War, but in the years following the war, they increased in number and size. Rock was quarried, crushed, and raised to tipples from which it was dumped into huge piles

¹Teague, op. cit., pp. 86-88.

according to coarseness. The rock companies found active markets for their products in the growing Los Angeles area where immense amounts of concrete were in demand. Fleets of trucks delivered sand, gravel, and crushed rock for use in building highways, sidewalks, dams, bridges, and reinforced concrete structures. Much crushed rock was trucked to a loading platform on the site of the old Leslie dryer to be carried away on the Santa Fe. More was loaded at a quarry in the northeast of the rancho, situated between the boulevard and the Pacific Electric tracks. This quarry and the accompanying crusher--now abandoned because of rock exhaustion--are shown in Figure 16 as they appeared from the air in 1929. The Southern Pacific, which then extended eastward to the river, aided in moving crushed rock westward across the Duarte rancho.

A number of institutions for caring for the sick and aged arose in unzoned and unincorporated Duarte during the years from 1915 to 1929. All were relatively small and looked like country homes except the Los Angeles Sanatorium on Duarte Road. This "City of Hope" for tubercular patients was expanding on stony land inherently poor for crops (Fig. 6).

Occupance in Relation to Roads and Automobiles

Improved roads and automobiles help explain small but socially significant changes in the rancho's landscape. In 1916 the Episcopal church in the townsite was deserted when the Duarte parish was absorbed into the larger Monrovia parish. In 1926 the little stone building was deconsecrated and made into a tea room, the "Chapel Inn," whose patrons arrive by automobile. In 1920 the Southern Methodist church on Buena Vista Avenue was abandoned when the increasing use of automobiles made it feasible for its members to attend services in the larger churches of Monrovia. The building was razed and a residence subsequently constructed on its site. By 1929 the little Methodist and Baptist churches serving Negro congregations in the Davis Addition were the only churches remaining in the unincorporated part of the rancho. In the Monrovia portion of the grant there were two other small churches for Negro congregations, but the handsome stone Catholic church--donated to the Monrovia-Duarte parish by the Bradbury Estate early in the century--remained the most conspicuous church.

Until the early twenties the Duarte post office was located

in the store building at the southward bend of the Foothill Boulevard. Then it was moved to quarters in a new building at the southeast corner of the junction of that road with Highway 66. By that time a rural delivery route through Duarte, operated from the Monrovia post office, had reduced the business of the Duarte post office. The store in which the post office had long been housed went out of business in 1931, for by then its former customers could travel in their cars to larger markets and combine shopping with other errands.

Long before 1929 Huntington Drive--now Highway 66--had become the most traveled east-west thoroughfare through the rancho. As it was the only road in the upper piedmont which led to a bridge across the San Gabriel River, much through travel concentrated on it. Between 1915 and 1929 commercial occupance features appeared along this highway to serve the motoring public which coursed through Duarte. Fruit stands, service stations, garages, and various types of restaurants were then, as now, supported chiefly by the highway rather than by the residents of the rancho. An auto camp, forerunner of the present motels, appeared in the early twenties on the margin of the rocky terrain on the south side of the boulevard.

Utilities and Occupance

In the early years of the twentieth century the Monrovia portion of the rancho was served with electric power by a public utility corporation, but little electricity was used in the unincorporated area. There the houses were lighted with kerosene lamps or acetylene gas, and cooking was done on wood, kerosene, or gasoline stoves. The Exchange had a plant for manufacturing its own electric current at the Duarte packing house, but its plant on the Santa Fe in the Monrovia section of the rancho was wired for electricity supplied by a public utility company. This local utility company soon merged with the Southern California Edison Company which developed an interlocking system of widespread power plants. As the Edison Company's program for the generation and marketing of electricity expanded, its wires were extended over Duarte. By the time the nation entered the first World War, power was available to most Duarte homes. By 1929 practically all the houses were lighted with electricity and some were equipped with electric ranges.

As the production of petroleum and natural gas increased in the Los Angeles area after the first World War, cheap gas became available and by the early 1920's was piped to most sections of the Duarte rancho. Except in the foothill mesas, to which gas mains have never been extended, gas is the chief fuel used for cooking and for heat. In the foothill section, electricity takes the place of gas.

Before 1915, each ranch home had its tank, cistern, or reservoir to store a dependable supply of domestic water. On some ranches a windmill towered above the trees to lift water into a high tank. Irrigation and domestic water then had a common source in the San Gabriel Canyon, but with an increasing number of people visiting the canyon, water from that source was deemed polluted and fit only for irrigation. Deep wells, drilled as standby sources of irrigating water, then became the principal sources of domestic water although--unlike soft canyon water--the well water is hard. During the 1920's, water under pressure became available to most ranch homes and the windmills and high tanks disappeared. With domestic water under pressure, and with gas and electricity available, the unincorporated section of the rancho acquired more characteristics of a suburb, although retaining its horticultural features. The incorporated area still received water from Monrovia's wells on the Rancho Santa Anita or from Sawpit Canyon, but soon obtained most of it from wells on the south border of the Duarte rancho.

The Impending End of Citricultural Dominance (1930-1947)

The Depression and Occupance (1930-1939)

Financial Conditions.--The depression in the citrus industry began with low prices in 1928, rather than with the stock market's crash in October, 1929. During the years when the national purchasing power was depressed, the Duarte rancho reflected superficially little of the widespread slump, but to the close observer, it was obvious that the settlement was not prosperous. A few of the migrants who came to California during the hard years were housed in auto camps along the boulevard. Many farm houses needed paint, few new cars were purchased, and some normally prosperous growers were obliged to secure federal crop loans. Half of the

Duarte citrus acreage was mortgaged,¹ and banks ultimately came into possession of a considerable portion of the mortgaged land. A Los Angeles bank and other creditors acquired all of the extensive Bradbury properties, including vacant and citrus property in the foothill section, undeveloped oak-covered land adjoining the northeast part of Monrovia, and Japanese-tenanted farm land in the southwest. The bank ultimately sold all of its Bradbury land to subdividers or to those who have since sold to subdividers. As the Bradbury Estate was the largest owner of Duarte land, these transfers of its properties have been significant in directing subsequent occupancy trends.

The heavy investment in a citrus orchard and the years of waiting required for it to come into bearing obviously tend to preserve established citricultural occupancy. The average investment in mature orange orchards in southern California from 1931 through 1935 was approximately 2,100 dollars per acre, of which 1,000 dollars represented land, and 100 dollars represented miscellaneous buildings and equipment.² However, some of those who purchased citrus property during the relatively prosperous twenties paid as much as 4,000 dollars per acre for it. Most of those who carried mortgages on such expensive properties and depended upon the income from oranges for security, lost their investments. Those who held their groves through the depression were chiefly experienced growers with no mortgages to carry, and those who had successful business or professional connections in one of the nearby cities. Most of those who bought Duarte citrus acreage at depression prices were not experienced fruit growers, but people who wished to live in the country while maintaining professional or business connections in the more urbanized area to the west.³

Increasing Competition.--The hard years resulted not only from the low purchasing power of people in the principal marketing centers east of the Rocky Mountains, but also from low prices induced by inter-regional competition. The expansion of orange

¹ Estimate of Randall T. Chew, Jr., manager of the Duarte-Monrovia Fruit Exchange from 1923 to 1942.

² Arthur Shultis, "Citrus Enterprise-Efficiency Studies in Southern California," University of California Bulletin 620 (Berkeley, 1938), pp. 35-37.

³ Among those who bought Duarte citrus acreage when it was relatively cheap during the thirties were doctors, dentists, a famous band leader, merchants, manufacturers, laborers, and retired persons.

acreage in other California citrus districts during the boom of the twenties more than offset the acreage lost to urban uses in San Gabriel Valley, and this new acreage was now a marketing factor. Production from the enormous acreage of oranges and grapefruit planted in Florida during those boom years was now on the market and citrus production in the Rio Grande Valley of Texas was mounting. Figure 17 depicts in graphic form the increasing production of citrus fruits for the twenty crop years from 1926-1927 through 1945-1946. This increase influenced the prosperity of Duarte and other older citrus districts by making many groves marginal producers. Besides mounting competition from other citrus areas during the depression years, citrus fruits had to meet rising competition from cheap canned fruits and fruit juices, particularly from grapefruit juice, grapefruit sections, and tomato juice.

The Freeze of 1937.--In 1937 when the worst years of the depression seemed to be over, a cold wave almost as disastrous as that of 1913 swept into the Los Angeles Lowland. For eleven nights in late January and early February, temperatures were below the danger point. On a few nights, pots were fired as early as 7:00 p.m. and were not extinguished until mid-morning. In the foothill section of Duarte where frost is seldom disastrous, temperatures dropped to an unofficial minimum of 21° F., and the crop was a total loss. On lower ground where firing was general, much fruit was saved and a considerable proportion was shipped under the Sun-kist label, but the freeze was costly in labor, oil, and human exhaustion. Heaters had to be filled during the night, adequate supplies of fuel were hard to secure, and in some groves old tires were burned as a last resort. Had a shipping strike not been in progress which tied up tankers in the Los Angeles harbor, less oil would have been available, but fleets of tank trucks and trailers moved Diesel oil to the citrus belt for which there was inadequate storage at the idle harbor. The segregation of good from frozen fruit was facilitated at the packing houses by the use of new X-ray sorting machines.¹

Water and Wind Damages.--Damage from water and wind added to the discouragement created by low prices and the freeze, tending to curb the expansion of citrus acreage. During the depression

¹This machine, developed by the General Electric Corporation in collaboration with the Field Department of the Exchange, reveals the interior quality of fruit by fluoroscopic methods without cutting the fruit. Its chief disadvantage is slowness of operation.

years, navel oranges developed water rot which caused a breakdown of the rind and fruit decay. Water rot, believed to result from the use of oil sprays, had first been severe in the early spring of 1927 after a prolonged rain, reaching 65 per cent in some navel orchards of Los Angeles County.¹ Except in 1928 and 1931--years of little late winter rain--this rind-rot caused losses. In February, 1938, there were heavy rains, and water rot seriously damaged the unharvested navel oranges. In the late winter of 1939 a north wind of unprecedented velocity swept down from the desert and mountains, causing the ground to be golden with fallen fruit. Damage was widespread, both navels and Valencias suffering heavily. Wind and water damages were responsible for a reduction in the income of orange growers and a local prolongation of the depression.

Cultural Practices.--The landscape reflected curtailed expenditures for orchard care. Pruning, the cultural operation of most doubtful value, was nearly eliminated except where year-round employees had to be kept busy. Some growers reduced pest control, fertilization, and irrigation to the detriment of their orchards. Cultivation was decreased, probably to the benefit of groves, as it tends to disturb feeder roots and increase soil erosion. Non-tillage grew--a practice in which weeds are kept down with oil without cultivation. Despite reductions in cultural costs, marketing a packed box of oranges remained expensive, for growers had no control over the most costly items involved. The average cost of producing a packed box of oranges during the years from 1931 to 1937 is broken down in Table 9. This table shows that cultural operations comprised but a small part of orange production costs during the depression years.

Marketing Affiliations.--The citrus marketing affiliations of Duarte during the depression years evidenced rising competition in the San Gabriel Valley between urban forms of land use and the traditional citricultural occupance. In 1923 the Duarte-Monrovia Fruit Exchange gave its name to a new district exchange and became the Duarte-Monrovia Citrus Association in a district organization which included territory from Pasadena to the San Gabriel River. One of the units in the new district exchange was the Duarte Foothill Association which had been formed from independent shippers. The annual business of the district exchange amounted during the twenties to as much as 2,500,000 dollars, but its operating costs

¹Howard S. Fawcett, Citrus Diseases and Their Control (New York, 1936), pp. 461-464.

were high for depression years, and it went out of business in 1937. The constant impingement of residential upon citricultural occupancy in the west of its district had helped shorten its life. With the passing of this district exchange, the major marketing affiliations of orange growers on the Duarte rancho shifted eastward to the less urbanized territory across the San Gabriel River. The Duarte Foothill Association joined the Azusa-Covina-Glendora Exchange, but the Duarte-Monrovia Citrus Association assumed its original name and continued its existence as a local association affiliated with the Covina Exchange.¹ The function of these local exchanges remained the collecting of fruit from the orchards, packing it, and arranging pooling systems to maintain the identity of the fruit so that each grower would receive precise credit for his various grades and sizes.

New Packing Houses.--In the interests of greater efficiency and economy, the Duarte-Monrovia Fruit Exchange built a modern fire-proof packing house on the Santa Fe west of Buena Vista Avenue, abandoning its frame buildings on the Southern Pacific in the townsite and on the Santa Fe in the west part of the rancho in Monrovia. In earlier years when fruit was hauled to the packing houses in horse-drawn wagons, the length and gradient of the haul had been so significant that two houses were maintained, but with the general use of trucks for hauling, the efficiency of the packing house became more important than its distance from the groves. With trucks in general use, the advantage of a packing house on the main line of the Santa Fe--rather than on a spur of the Southern Pacific--affected the choice of a site. The Duarte station on the Santa Fe was abandoned about the time the new packing house was built, but with telephone service expanded, the absence of a nearby station has been no disadvantage. The Duarte Foothill Association built a small but modern fire-proof building on the Pacific Electric in the northeast of the rancho near the orchards of its principal shippers. The financing of both packing houses was facil-

¹By the time it first joined a district exchange, the Duarte-Monrovia Fruit Exchange was too small for representation among the district exchanges represented on the board of directors of the California Fruit Growers Exchange. There are now 24 district exchanges in California and one in Arizona represented on that board. Each director represents from one to 22 local packing units. About 14,500 growers are members of 201 local packing units comprising the basic organization. Had the little Duarte-Monrovia Fruit Exchange retained its representative, its voting strength would have been too great for its membership and acreage.

TABLE 9

AVERAGE COST OF PRODUCING ONE PACKED BOX OF ORANGES
IN LOS ANGELES COUNTY, 1931-1937, EXCLUSIVE
OF INTEREST AND DEPRECIATION^a

Breakdown of Cost	Seven-Year Average
Water	\$.11
Fertilizer	.15
Spray, Fumigation	.09
Pruning	.04
Frost Protection	.06
Cultivation	.05
Harvesting	.14
Other Costs (Taxes, Insurance, etc.) . . .	.54
District Exchange Costs	.01
Selling	.05
Advertising	.05
Packing	.48
Freight and Refrigeration	1.23
Total Cost	\$3.00

^aSource: The California Citrograph, Vol. XXIV,
(September, 1939), p. 416.

itated by federal legislation which permitted granting federal
loans to qualifying co-operative marketing organizations.¹

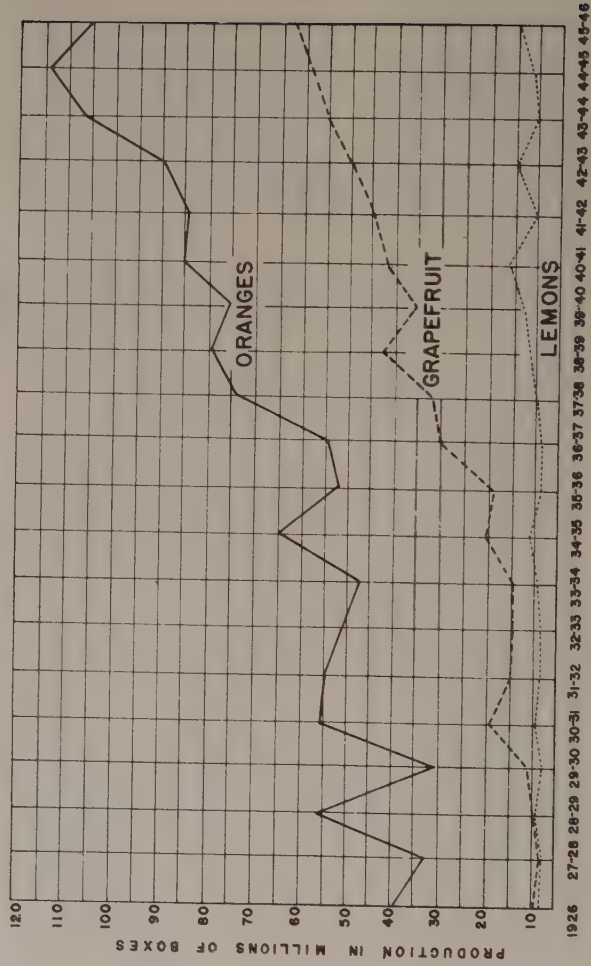
Evidences of Declining Citricultural Dominance in the War and Post-War Years (1941-1947)

Returns in Relation to Production Costs.--As the swelling
Los Angeles conurbation pushes urban occuance farther from its
commercial heart, its impact, in combination with low returns and
high costs of producing oranges, is contributing to the rise of new
types of occuance in Duarte's citrus belt. Orange prices rose in
1939 and 1940 when the government became the principal buyer of
oranges and orange products.² A wider knowledge of nutrition and
the high purchasing power arising from full employment also helped
strengthen the market. Despite this greater demand, with a ceiling

¹These loans were obtained through the Berkeley Bank for
Co-operatives which is maintained by the Farm Credit Administration.
This bank has recently extended credit to Duarte's two principal
mutual water companies to facilitate their consolidation.

²As much as 20 per cent of the crop--chiefly small sizes
and low grades--went to by-products plants for manufacture of con-
centrates and other products for the armed services and for lend-
lease shipments.

TOTAL UNITED STATES CITRUS PRODUCTION BY MAJOR
VARIETIES, 1926-1927 TO 1945-1946



SOURCE: Annual Report, California Fruit Growers Exchange, 1946.
FIGURE 17

on their fruit and rising labor and cultural costs, growers were not prosperous. By June, 1947, increased freight rates had raised the cost of shipping and icing a box of oranges 30 cents above the average costs of the years from 1931 through 1937 (Table 9). Meantime harvesting costs had jumped from 14 cents per field box to 22½ cents, and packing charges had soared from 48 cents (Table 9) to 77½ cents per packed box.¹ Pest control charges have risen, and aphids, relatively new pests which thrive in the high fogs of spring, require costly attention. Taxes are mounting, and there seems little likelihood of their being cut while governing costs rise and increasing population necessitates expanded public services. With the narrowing spread between production costs and returns, some growers--especially those with high operating costs--are turning their orchards into residential lots.

The National Situation in Citrus Fruits.--Figure 17 pictures the upward trend in the national production of citrus fruits, a trend partly responsible for the shrinking citricultural occupancy of the Duarte rancho. As Table 10 reveals, in five of the past eleven years other states have shipped more citrus fruits than have California and Arizona. Florida, with cheaper land, lower production costs, and advantageous proximity to markets, is now the leading citrus state. Texas, while not a major factor in oranges as in grapefruit, is shipping 13,000 cars of oranges in the 1946-1947 season.² Increased domestic consumption or profitable export--or both--will obviously be necessary if citriculture is to be profitable in any of the nation's citrus-producing regions. The national consumption of oranges rose from 19 fruits per capita in 1920-1921 to 33.6 in 1939-1940, and by 1952-1953 a consumption of 200 fruits per capita is predicted. Even if this anticipated increase is realized, the enormous national production seems certain to continue as a factor in forcing some of the orange groves of the Duarte rancho from the areal pattern.³

¹The author is indebted to Edward S. Hart, manager of the Duarte-Monrovia Fruit Exchange, for figures on current costs.

²Letter to Sunkist growers from Paul S. Armstrong, general manager of the California Fruit Growers Exchange, October 21, 1946.

³F. R. Wilcox, assistant general manager of the California Fruit Growers Exchange, in a letter to Sunkist growers on May 23, 1947, wrote: "In 10 years Florida's citrus production has grown from 40 million boxes a year to 100 million and from photographs of new plantings, mostly valencias, the peak is nowhere in sight."

TABLE 10

UNITED STATES CITRUS SHIPMENTS IN STANDARD CARS
BY YEARS FROM 1936 THROUGH 1946^a

Fiscal Year	CFG Exchange	Other Calif. and Arizona	Total Calif. and Arizona	All Others	Total United States
1936	71,088	24,681	95,749	66,221	161,970
1937	54,581	15,592	70,173	92,118	162,291
1938	81,465	29,993	111,458	97,886	209,144
1939	73,084	27,225	100,309	131,186	231,495
1940	83,236	32,951	116,187	90,640	206,827
1941	89,068	32,203	121,270	108,875	230,145
1942	94,645	32,977	127,622	103,275	230,897
1943	85,054	27,845	112,899	133,966	246,865
1944	96,672	36,416	133,088	158,118	291,206
1945	101,140	39,604	140,744	135,512	276,256
1946	82,878	32,233	115,111	150,323	265,434

^aSource: Annual Report of the California Fruit Growers Exchange, 1946 (Los Angeles, 1947). Standard car loadings in California and Arizona are 462 boxes for oranges and grapefruit, and 406 boxes for lemons. Standard car loadings in other states are 400 boxes for all varieties.

Competition with Other Fruits and with Citrus Products.--

Almost overnight canned juice production has mushroomed into a major citrus activity. During the 1945-1946 season Florida canned 70 per cent of its grapefruit and 40 per cent of its oranges.¹ The canning program in Texas is also substantial. Though not so significant in California and Arizona, canning there has expanded materially in the past five years. At present 13 per cent of the nation's orange crop is consumed in other than fresh form² and much more of the grapefruit crop, the principal competitor of the orange crop. Meantime, the production of canned fruit other than citrus is rising, and frozen fruits are reaching consumers in larger quantities. Competition with citrus products and with other fruits and juices is a growing threat to the successful maintenance of citriculture where, as in Duarte, high production costs prevail.

Decreasing Local Marketing Facilities.--Chiefly because of declining acreage and increasing operating costs, the Duarte Foot-hill Association sold its packing house in 1946, liquidated its other assets, and went out of business. Some growers who had marketed their oranges through this association are now selling to

¹Ibid. ²Ibid.

independent packers, but the owners of over 300 acres of orange land have joined the Duarte-Monrovia Fruit Exchange, prolonging the life of that pioneer organization. The directors of the Duarte-Monrovia Fruit Exchange are convinced that within two years residential subdivisions will have taken so much citrus acreage out of commercial production that their packing house will go out of business, for if it handles under 125,000 field boxes per year, its operating cost will become unreasonable. With the increased acreage from the Duarte Foothill Association, the Duarte-Monrovia house is handling 200,000 field boxes in 1947, though with an average crop and larger fruit, the quantity should be 235,000 boxes. When the organization goes out of business, oranges from any acreage remaining in production will be marketed through district exchanges east of the San Gabriel River.

Declining Quality of Fruit.--On the Duarte rancho, as elsewhere throughout the orange belt of the San Gabriel Valley, a large percentage of Valencia oranges is fruit too small for profitable marketing.¹ Small sizes help account for the increasing part of the Valencia crop sold for juice and made into orange by-products. As the income from by-products is very little, small fruit, in combination with other unfavorable factors, is militating against citricultural occupancy.

Declining Quality of Groves.--Field observations have revealed a progressive decline in the quality of certain Duarte orchards between 1941 and 1947. Plate III indicates the extent and quality of the rancho's citrus acreage in May, 1947. Groves which have gone out of production since 1947 have been chiefly those which in 1941 were of poor or fair quality. Good groves of adequate size have tended to remain in production. Outstanding among local causes of low quality which make orchards marginal and sub-marginal producers have been poor soil (Fig. 6), inadequate care, lack of managerial skill, absentee ownership, insufficient acreage, inherently unproductive trees, and "quick decline." The division of orchards of pioneer growers among scattered heirs has contributed further to the declining quality of certain orange groves.

¹Nematode infestation of roots is believed one cause of small sizes. No satisfactory cure has been developed for these microscopic worms which live parasitically on rootlets. Some growers contend that insufficient sunshine resulting from industrial smog is partly responsible for the small size of fruit. Probably small sizes result from a variety of causes.

Declining quality helps explain why most Duarte groves yield less than the 500 field boxes per acre considered necessary for a consistently profitable income. Quick decline has affected some trees in orchards from the Foothill Boulevard southward to Duarte Road and is doubtless present in other groves where it has not been definitely identified. This disease, though not yet well understood, is known to be caused by a virus which affects sweet orange trees growing on sour rootstock. Most Duarte groves under thirty years of age may be attacked by the mysterious disease, inasmuch as thirty years ago the practice became general of growing oranges on sour rather than sweet rootstock in order to minimize gummosis, a disease to which trees on sweet rootstock are particularly susceptible. A contributing cause of the declining quality of certain Duarte groves has been the failure to replace old or poor trees with young ones of good quality. The high cost of nursery stock is one cause of this condition, but a more potent one is the conviction that before the six years required for trees to come into adequate bearing have elapsed, residential occupancy will have engulfed the land.

Declining Size of Groves.--Insufficient acreage contributes to the low quality of fruit and to the low quality of some orchards. The average California orange grove contains between 10 and 15 acres, although one of less than 20 acres is conceded to be an inefficient unit in view of the characteristically wide annual variation in the price of oranges. Duarte ranches range from one acre to over 50, but their average size is now about six acres and the average size is declining. Small acreage makes overhead expenses out of proportion to income. Some Duarte ranchers maintain a tractor for units of less than ten acres, whereas one good tractor generally suffices for an orchard of several hundred acres.

Competing Forms of Occupance.--A comparison of the occupancy map of the rancho in 1947 (Plate III) with the aerial mosaic which depicts the general outlines of the rancho's occupancy in 1929 when citriculture attained its maximum acreage (Fig. 16), reveals that other forms of land use have been competing successfully with citriculture. Orange acreage within Monrovia has contracted to make way for expanding commercial, manufactural, and residential occupancy. In the unincorporated area between the townsite and the Davis Addition, residential occupancy has invaded orange orchards. On California Avenue houses have invaded groves within the past

six months. The cemetery has expanded eastward, but leases land for grain hay which in 1929 was covered with a vigorous orchard. Its owners have bought fifty acres of orchards south and southeast of their original property, but they are keeping these groves in commercial production until the land is needed for cemeterial use. Orchards along Highway 66 are shrinking (Plate IV), and the frontage of some is used for motels, trailer courts, restaurants, and nurseries. In several sections residential lots are being sold from orange orchards. Such shrinkage of citrus acreage portends the end of citricultural dominance in the occupance pattern of the Rancho Azusa de Duarte.

Frost Protection and Occupance.--Legislation enacted in 1947 permits the creation of a Los Angeles County Air Pollution Control District to cope with a menace which has grown with the rise of industry, and the new district will soon be functioning. Although little smog is created in the San Gabriel Valley, the fumes and haze developed by petroleum refineries and heavy industry in the coastal plain (Plate I) blow into the valley with the prevailing southwest winds. Smoke from agricultural operations is specifically exempted in the new enabling legislation, yet compulsory restriction of orchard heating will almost certainly accompany further expansion of residential occupance. Seventy per cent of the acreage from which fruit is marketed through the Duarte-Monrovia Fruit Exchange is protected by orchard heaters, although because of its high cost in relation to returns from fruit, heating is actually practiced on but 25 per cent of the acreage. If legislation or court decisions necessitate new types of frost-fighting equipment, the protected acreage is likely to yield to competing forms of occupance. Three wind machines for frost protection are used on the rancho, but their further installation is discouraged by their high cost and by areal competition with citriculture. Furthermore, their noisy operation makes them unpopular in an area of rising residential occupance.¹

The Outlook.--The end of citricultural dominance of the Duarte rancho looms as centrifugal pressure from the expanding Los Angeles conurbation thrusts urban forms of occupance into its peripheral zones. Mounting competition with other citrus regions

¹Wind machines consist of electrically operated airplane propellers on tall towers. The propellers rotate and revolve to keep the air in circulation. Their revolution is adjusted according to the shape of the orchard they protect.

augments the local areal competition in hastening the end of citricultural dominance. Adverse conditions make it difficult for growers in this pioneer citrus area to maintain profitably the high quality of fruit which, according to the general manager of the California Fruit Growers Exchange, is the industry's chief hope of survival.

From the standpoint of the California industry, our success in the future depends upon the maintenance of high quality grade and pack and an increased per capita consumption of fresh citrus. Because of higher costs in California, we cannot compete on a price basis with the cheaper fruit produced in other areas. This applies to products as well as fresh fruit. Consequently, we must maintain high standards of quality and constantly seek to increase the per capita consumption of all varieties of citrus.¹

Nonagricultural Occupance in the Years of Citricultural Dominance

Zoning and Occupance.--Until the last eight years, occupance in the unincorporated section of the Duarte rancho resulted almost solely from individual initiative, hampered only by the necessity of securing building permits and licenses for certain commercial ventures. Although like associated with like sufficiently to create recognizable functional areas, demands arose for zoning restrictions which would prohibit the use of land for purposes deemed socially undesirable and detrimental to the value of surrounding property. These demands were stimulated by the extension of rock crushers and by the fear that the pits left when exploitable rock was gone would turn flood waters over arable land. The establishment of hog ranches on the rocky margins of the riverwash section (Fig. 6) further stimulated these demands. A zoning plan was finally drawn up which became effective in April, 1941. This plan, together with that for the Monrovia section of the rancho, is shown by Figure 18. Both plans have tended to crystallize existing functional areas, as well as to direct and restrict new forms of land use. Changing conditions are making the plan for the unincorporated area unsatisfactory, and a new one is now being drafted. The principal changes will apparently be the substitution of light manufacturing in the riverwash area for heavy industry--a category which in reality permits unlimited use of land--and the assignment of new residential subdivisions to the

¹Letter from Paul S. Armstrong to shippers of fruit through the California Fruit Growers Exchange, January 22, 1947.

ZONING PLANS FOR THE RANCHO AZUSA DE DUARTE

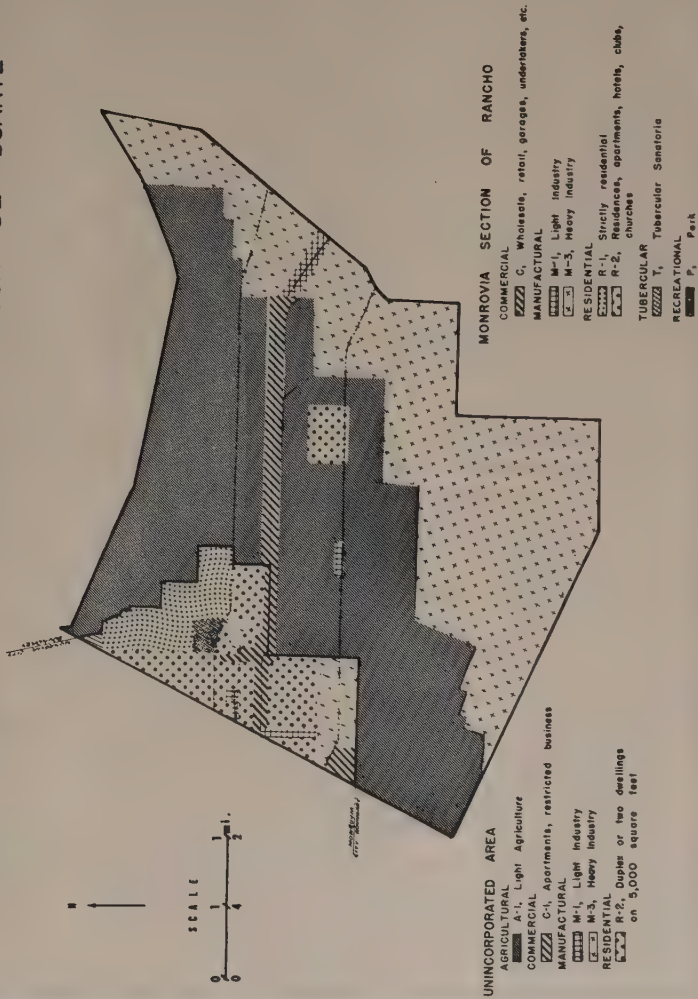


FIGURE 18

category of single-family residences instead of to light agriculture.

Rising Residential Occupance.--There was a gradual expansion of the rancho's residential occupance between 1930 and 1940. During the war years when building was at a standstill, this trend was checked, but since 1945 it has been sharply upward. In Monrovia, post-war residential expansion has resulted in the building of homes on vacant lots and in the extension of residential occupance eastward into orange groves of declining quality and southward into blocks used in pre-war years for orchards and field crops. In the unincorporated area, changes have been startling. Nothing is left in the southwest corner of the rancho to intimate that less than a decade ago the land was used for growing vegetables and berries. Shacks of the Japanese tenants are gone and the little building used before Pearl Harbor for a Japanese-language school is the office of the company which is building Mayflower Village. Focused on the corner of California and Euclid Avenues a new residential community of veterans' houses is rising in orange orchards. There forty-six houses had been completed or were under construction by July 1, 1947, and one hundred more were scheduled for immediate construction. Both sides of Mountain Avenue southward from the boulevard to Central Avenue have shifted from citricultural to residential occupance. New houses are being built eastward from this district along the north side of Central Avenue. Lots have been sold from orange orchards on both sides of Buena Vista Avenue between Central Avenue and Duarte Road and that section, where some trees are affected with quick decline, is rapidly shifting to residential occupance. In the northeast along Fish Canyon Road, post-war houses are going up as building lots are sold from orange groves.

By 1948 new subdivisions will apparently give rise to residential occupance in sections of the rancho heretofore characterized by other forms of land use, for several parcels are being prepared for the building of houses. In the Bradbury Estates (Fig. 4) streets are being run through barley fields and chaparral in preparation for a subdivision of high quality. Stony land south of the highway along the west side of the river is being cut into 220 lots with average dimensions of 60 by 150 feet in preparation for the building of "American Village." On the south side of the highway west of Highland Avenue roads are being cut through a poor orange grove in preparation for residential occupance. Farther

south, a five-acre grove on the north side of Shrode Avenue is being divided into homesites. On the east side of Peck Road, a forty-acre tract, which was leased to Japanese tenants before the war, is being surveyed for a subdivision to contain 158 houses. Mayflower Village, which on July 1, 1947, had 160 houses completed or under construction, is soon to be extended eastward to Peck Road. The Los Angeles County Regional Planning Commission has approved plans for the subdivision of a twenty-acre walnut orchard near the south boundary of the rancho. Like the subdivisions of the eighties, the future of these projected subdivisions will be contingent upon general conditions of employment and prosperity. It is now difficult to draw a line between rural and urban occupancy, for with the amenities of urban life available on plots of rural ground, much of the rancho has characteristics for which the term "rurban" has been suggested. When the lots in these projected subdivisions are filled with houses, much of the "rurban" quality which has long distinguished the Rancho Azusa de Duarte will be lost.

Commercial Occupance.--Occupance shifts resulting in more commercial functional forms have occurred chiefly along Highway 66. Plate IV, composed of strip maps which depict occupancy on the boulevard frontage in 1939 and 1947 respectively, demonstrate the trend toward increased commercial use of boulevard frontage. A comparison of these traverse maps discloses that, although some changes have come through using land which was vacant eight years ago, more have occurred through the supplanting of citriculture by motels, trailer courts, restaurants, automotive establishments, novelty shops, and nurseries. East of Buena Vista Avenue many commercial establishments now extend northward to the abandoned right-of-way of the Southern Pacific. Motels have multiplied since the war, particularly on the north side of the highway--the side accessible to west-bound motorists. Motels and trailer camps are classified under residential occupancy on Plate IV because during the current housing shortage they function somewhat as semi-permanent housing. Except for such semi-permanent tenancy, occupancy along the highway seems increasingly related to highway traffic and correspondingly unrelated to the local community except as it provides employment for local residents.

Manufactural Occupance.--The Day and Night Manufacturing Company's plant occupies a site on the corner where the Foothill Boulevard turns eastward. This factory is the outgrowth of a

little plant started in Monrovia forty years ago to make solar water-heaters. Both in payroll and in the value of its products, it is the outstanding factory on the rancho. It illustrates the tendency for Eastern and Middle Western manufacturing concerns to secure branches in the West, for in 1945 it became one of the units owned by the Dresser Industries, Inc., of Cleveland, Ohio.

Manufactural occupance made no notable advances on the rancho during the depressed thirties except in the far southeast, where a plant arose to fabricate steel pipe for the Los Angeles Metropolitan Water District.¹ This factory--remote from other sections of the rancho--now makes concrete pipe. A post-war factory has arisen on Meridian Road to make concrete building blocks. With no buildings except a steel tipple, all its operations are carried on outdoors. The blocks are spread to dry on land used less than a decade ago by Japanese tenants for growing strawberries. A factory which arose in Monrovia east of the Santa Fe station to handle military contracts is still in operation. A road-building firm has constructed a building on the triangular site between the Monrovia station and Duarte Road, using the surrounding land for parking its bulldozers, scrapers, and rollers. Three post-war factories have been built on California Avenue north of the Santa Fe in the district zoned for industry (Fig. 18). Steel tape, heels for shoes, and emulsifying equipment are made in buildings of attractive industrial design surrounded by pleasing landscaping and paved parking lots. To the northeast opposite the airport (Plate III) a plant has arisen for building house trailers. To get its raw materials, it makes use of the Santa Fe spur built in the nineties for the Leslie Dryer. A small plant is under construction on Duarte Road east of California Avenue which will shortly start the manufacture of spark plugs.

Manufactural occupance has advanced somewhat as the rancho's oranges have been increasingly marketed through the Duarte-Monrovia Fruit Exchange. Three long, narrow frame structures which formerly were used for packing oranges marketed by independent shippers are now used as little factories. One, situated on the Santa Fe west of Buena Vista Avenue, makes liquid fertilizer. Another, along the now abandoned right-of-way of the

¹When first laid, the power line from Hoover (Boulder) Dam to Los Angeles crossed the southeast corner of the Duarte rancho. It was later moved to make way for the Santa Fe Dam.

Southern Pacific, is used for making and repairing gas heaters. The third, also originally located to take advantage of Southern Pacific shipping, is used for making an insecticide. The fire-proof packing house of the Duarte Foothill Association was sold to a company which used it for a few months to fabricate cardboard boxes. This packing house has been resold and is now being prepared as a plant for grading and distributing bananas brought from the harbor by the Pacific Electric.

Institutions.--Institutional occupancy spread throughout the unincorporated section of the rancho until checked in 1941 by zoning restrictions. In Monrovia, tubercular sanatoria advanced in the zone set aside for them, part of which is in the Duarte rancho (Fig. 18). The largest institution on the rancho is the Los Angeles Sanatorium on Duarte Road, an institution founded and maintained by the Jewish Consumptive Relief Association. Such names on its buildings as Chicago, Cleveland, San Francisco, and International Garment Workers of America bespeak its national character. This sanatorium has recently been merged with Mt. Sinai Hospital of Los Angeles and the Mt. Sinai-Duarte Foundation has started construction of a 7,000,000-dollar medical center in Duarte. Final plans call for a 700-bed hospital, a medical college, a nurses' training school, a research department, and a clinic with facilities for post-graduate medical study.

Santa Teresita Sanatorium on the corner of Buena Vista Avenue and the Foothill Boulevard is the second largest institution on the rancho. It was founded in a Duarte orange grove in 1931 by nuns who had fled from Mexico after the nationalization of church property there. Its services are available to Spanish-speaking tubercular girls. Several smaller tubercular sanatoria scattered over the rancho are indistinguishable from residences. The Palm Grove Sanatorium on South Mountain Avenue, an institution for elderly women patients, is the principal non-tubercular institution on the rancho.

Railroads.--Railroads remain vital for connecting the Duarte rancho with regions outside the Los Angeles Lowland, but they are of declining utility for local transportation and of dwindling areal significance. The Southern Pacific has provided no local transportation in over forty years, and a decade ago removed its track east of the Day and Night factory. The Santa Fe discontinued local train service thirty years ago. Twenty years ago it abandoned its Duarte depot and five years ago wrecked the

building. The Pacific Electric Railway now provides the only local railway transportation. It has made no occupance changes and, except for somewhat more frequent trains, has made no improvements in its services in the forty years it has crossed the rancho.

TABLE 11

JULY TRAFFIC FLOW OVER HIGHWAY 66 THROUGH DUARTE
AND AZUSA FOR THIRTEEN CONSECUTIVE YEARS^a

Year	Duarte Between Shamrock and Mountain Avenues		Azusa At West City Limits	
	Sunday	Monday	Sunday	Monday
1934	14,864	8,116	15,694	7,588
1935	14,804	8,004	14,517	7,361
1936	16,585	8,954	16,416	8,361
1937	18,195	9,843	18,264	9,145
1938	16,818	9,868	16,099	8,776
1939	15,372	9,535	15,912	8,407
1940	17,099	9,808	16,531	8,811
1941	20,018	10,581	19,117	9,477
1942	15,043	8,258	14,097	7,533
1943	13,882	7,684	10,604	6,020
1944	11,561	7,282	10,141	5,759
1945	15,345	9,302	14,168	7,572
1946	23,359	14,577	20,871	12,641

^aSource: Letter from H. L. Kile, Assistant Traffic Engineer, California State Division of Highways, April 3, 1947.

Roads.--While the local services of the railroads have declined, public roads have improved and automobiles have become the most distinctive means of local transportation. As roads have multiplied, traffic over them has mounted. The flow of cars over Highway 66 through Duarte is largely responsible for the expanding commercial occupance along that thoroughfare (Plate IV). Table 11 summarizes the trends in traffic over this boulevard from 1934 through 1946. Except for the depression years of the middle thirties and for the war years when gasoline was rationed, there has been a steady increase in the traffic flow. Sunday's traffic is nearly twice as heavy as Monday's, suggesting the prevalence of pleasure trips on that day. To regulate and retard this flow of traffic, a co-ordinated system of signals is being installed at intersections between Myrtle Avenue in Monrovia and Azusa Avenue in Azusa.

Projected Freeway and Highways.--The creation of efficient, co-ordinated highways out of roads which, like Duarte's, grew out of local needs, is one of the problems of metropolitan Los Angeles. There were 1,411,881 registered motor vehicles in Los Angeles County in 1946, and they congest the major thoroughfares. The county's Regional Planning Commission has surveyed routes for future highways through the Duarte rancho, and its maps suggest that Highway 66 will not long be the only east-west highway to extend eastward across the rancho and over the San Gabriel River. An increase of one and one-half cents per gallon in the state gasoline tax effective July 10, 1947, is likely to contribute to the early construction of these projected roads. Duarte Road is to become a freeway, crossing the San Gabriel River atop the Santa Fe Dam. El Camino Real, which now extends from Arcadia through Mayflower Village, is to be thrust farther eastward to join Meridian Road, whence it will branch northeastward to Duarte Road and southeastward to the Arrow Highway (Plate III). Mountain Avenue is to be a major north-south highway, but its continuation south of the Arrow Highway will be blocked by rock crushers, gravel pits, and the bed of the Rio Hondo. Plans are afoot to extend the Foothill Boulevard eastward from the point in Monrovia where it now bends southward. This projected scenic highway--not to be designed for fast traffic--will cross the Duarte foothills and use a new bridge over the San Gabriel River. Plans for future highways influence occupancy and occupancy changes, for permits for residential subdivisions and for new buildings are issued in conformity with the road pattern which includes these projected thoroughfares. More and better highways are accentuating the tendency for boundaries between separate communities to disappear from the landscape as the automobile permits urban and suburban occupancy to fill the inter-city spaces.

Water and Occupancy.--The Duarte Mutual Water Company, successor to the Duarte Mutual Irrigation and Canal Company and the Beardslee Water Ditch Company, is beginning the extension and expansion of its mains to improve the distribution of domestic water over its service area (Fig. 7). By this improved service, it is facilitating the spread of residential occupancy. Its stock is being issued in smaller units than that of either of the companies of which it is the successor. This splitting of stock into smaller units is affecting occupancy through permitting more people to own rights to water through their ownership of shares. This

ownership of the rights to water by the people themselves is discouraging the incorporation of Duarte as a city. People are unwilling to dispose of their valuable water stock to a municipality, and without stock in the Duarte Mutual Water Company, the oft-proposed town of Duarte would have no rights to water from the San Gabriel River and would have doubtful rights to water pumped from the underground basins (Fig. 7). The demand for irrigating water on the rancho is declining, but the total water consumption shows no decrease. Since on an acreage basis the urban requirements for water in the Los Angeles Lowland are about the same as for citriculture, or approximately two and one-half acre feet per annum, no decline in the consumption of water is likely to occur. However, progressively more water is coming from wells and less and less directly from the San Gabriel River, a trend destined to continue unless and until the polluted river water is chlorinated to make it suitable for domestic use.

CHAPTER VI

FINDINGS AND CONCLUSIONS

Summary of Findings

In the 176 years since white men first settled in the San Gabriel Valley to establish a mission, the valley has evolved from Indian country without permanent habitations to an area dominated by horticultural, urban, and suburban forms of occupance. Grazing, the chief form of land use when the San Gabriel mission controlled the land, laid the foundations for the rancho occupance of the Mexican and early American periods. Rights to surface waters, which date from the rancho era, have been basic to much of the increasingly intensive forms of land use of subsequent periods. Except for features dependent upon rights to surface water and for boundary lines between ranchos, little in today's landscape dates from the rancho era.

Occupance of the Rancho Azusa de Duarte, the land unit used in this study to exemplify that of the upper San Gabriel Valley, has shifted gradually from that of rancho to farms to suburb. Changes have been most rapid in the boom eras following wars and in the boom of the eighties following the coming of railroads. The gold rush which followed the Mexican War changed the chief commercial product of the region from hides to beef. That dramatic episode in California history helped prolong pastoral occupance into the American period, despite confusion in land titles and monetary standards which simultaneously tended to end it. A great drought in the Civil War years, in combination with these other factors, virtually ended rancho occupance. Thereafter farms invaded the arable portions of the Rancho Azusa de Duarte, although sheep pastures assumed some importance in the seventies. Viticulture, the major form of commercial horticulture in the Los Angeles Lowland in the seventies, was represented early in the Duarte occupance pattern, but did not achieve outstanding areal or economic significance. Field crops dominated the rancho's early farms, but as new settlers arrived, subsistence orchards spread. Commercial orchards, with their requirements of irriga-

tion, capital, and dependable transportation to markets, had no place in the earliest crop pattern, but some were planted in the seventies after the first railroad reached the Los Angeles Lowland. The boom of the eighties brought in new settlers, stimulated the building of homes, and encouraged further planting of commercial orchards. The first Duarte orchards were of deciduous varieties, but orange groves spread rapidly during the eighties and nineties. From 1880 to 1890 new orange orchards were of Washington navels, but after 1890 new plantings were chiefly of the Valencia variety. In the early years of the twentieth century, citrus groves crowded out the remaining deciduous orchards and dominated the crop pattern. Citriculture has had its ups and downs, but because of the heavy investment involved, tends to remain until dislodged by some more intensive form of land-use. Duarte's citriculture has been weakened in its hold on the land-use pattern by such varied influences as the encroachment of the city of Monrovia, inter-regional competition, advanced techniques of canning and quick-freezing, the depression of the thirties, and war and post-war problems. It is now giving way to those suburban forms of land use which the burgeoning Los Angeles metropolitan district persistently shoves farther from its commercial heart.

The rocky nonagricultural section of the Duarte rancho expanded during the past century as the untamed San Gabriel River spread boulders over the land. For the past forty years, rock crushers have exploited the stone, gravel, and sand available in this area, marketing the products in the growing Los Angeles district. Meantime dams in the San Gabriel Canyon have restrained flood waters and the Los Angeles County Flood Control Commission and the Corps of Engineers have attempted to give the river a more definite channel. The Santa Fe Dam and the retarding basin it creates are landscape evidences of the importance of conserving water in a semi-arid land, and of taming the torrential, intermittent streams which characterize such a region.

Conclusions

Impermanence of Occupance

The sequent occupance of the Rancho Azusa de Duarte has demonstrated the impermanence of satisfactory adjustments of the cultural to the natural landscape. From the Indian period to the

present, many factors have promoted new adjustments. Outstanding among these have been the immigration of peoples of new habits, war and peace, changes in political sovereignty, weather vagaries, the rise of irrigation, improved transportation facilities, changes in the national diet, and the availability of power from petroleum, natural gas, and electricity. Other influences in other times will contribute to a new sequence of occupation.

Without dependable sources of water and facilities for storing and distributing it, the Duarte habitat is inherently suited to few uses other than grazing and the growing of winter crops. As the occupation history of the rancho has proved, the soils of its arable section (Fig. 6) are adaptable to many uses if irrigated. Their most effective use in any historical period has been contingent upon such diverse elements as the culture traits of residents; the speed, dependability, and frequency of contact with marketing centers; the efficiency of marketing agencies; the density, distribution, prosperity, and occupations of people of the Los Angeles Lowland; the quality, mileage, and routes of roads over which residents and employees on the rancho move in their automobiles; and swings of the business cycle. Grazing was an efficient use of the San Gabriel Valley before the American conquest and in keeping with the traditions of its Spanish and Mexican inhabitants. The use of the land for field crops was in harmony with the conditions and traditions of the early American period. Its use for a succession of tree crops was likewise been in keeping with the needs of the times and with the prevailing spirit of free enterprise. In the sequence of agricultural uses of the land, the qualities of the soil have been significant, but as residential, commercial, and manufactural occupation spread, the inherent qualities of Duarte's Hanford and Ramona soils (Fig. 6) are of declining significance.

Functional areas have developed in the Rancho Azusa de Duarte without co-ordinated plans for the use of all the rancho's land. With the encroachment of chaotic forms of occupation, however, zoning plans came into existence, both for the Monrovia and for the unincorporated sections of the rancho (Fig. 18). The first Monrovia plan has been modified several times and the plan for the unincorporated section, though but six years old, is already so unsatisfactory that a new one is being drafted to supplant it. As new conditions arise, other zoning plans will recognize the impermanence of satisfactory forms of land use.

Remoteness and Sequent Occupance

That isolation born of remoteness which is inherent in the Los Angeles Lowland has been reflected in the sequent occupance of the Rancho Azusa de Duarte. From 1771 to 1822 this rancho was part of the distant frontier into which Spain thrust a thin line of settlements to check the advance of other empires. From 1822 to 1848 it was part of the Mexican area most distant from the national capital. Since 1848 when Alta California was annexed to the United States, the Los Angeles Lowland has been separated from the populous northeast quarter of this nation by distance, deserts, and mountains. New England's influence on the pastoral occupance of the region was strong when the long sea voyage around South America was the principal route connecting the east and west coasts of North America and when California hides furnished essential raw material for New England shoe factories. With improved accessibility, population has come to represent a wide variety of origins, yet remoteness persistently affects occupance. From the hides, tallow, and wool of mission and rancho periods to the oranges of today, the chief commercial products of Duarte land have been of good keeping qualities and of sufficient value to permit their being shipped long distances. Railways, refrigerator cars, truck transportation, paved highways, the rise of a great port in the Los Angeles Lowland, and multiplied airways have modified but not obliterated these basic tendencies. The high freight rates inherent in remoteness from major citrus markets--rates which adversely affect the Duarte rancho's citriculture--are but one aspect of the persistent results of remoteness.

Increasing Impact of Institutional Occupance

The Los Angeles Sanatorium with 250 patients has been in the past a passive rather than an active agent in the functioning of the Duarte community, but it is now of growing social and areal significance. The expansion now under way which will make that institution a national medical center will be reflected in the landscape in more ways than merely in an augmented physical plant. The enlarged institution will require housing for its increased staff, more commercial establishments, and more adequate public transportation. A hastening of the rancho's shift to more urban types of land use is implicit in such requirements.

Centrifugal Tendencies of Peripheral Areas

Parts of the peripheral portions of the Duarte rancho have tended to break away from the central core of the land unit. The city of Monrovia absorbed over two hundred acres in the northwest corner of the rancho when incorporated in 1887 and has subsequently expanded eastward and southward until one-fifth of the area is now within its limits. Monrovia--the largest city between Pasadena and Pomona--has exerted a gravitational force on the unincorporated remainder of the Duarte rancho, a force which seems destined to continue. The inclusion of the unincorporated area west of California Avenue in the Monrovia elementary school district has tended in some respects to detach that section from the remainder of the Duarte community. Mail delivery from the Duarte post office will be established over most of the unincorporated area before 1948, supplanting rural delivery from the Monrovia post office, but mounted carrier service from the Monrovia post office will serve that portion of Duarte west of California Avenue. A different mailing address will tend further to dislodge the southwest section from the Duarte community. Mayflower Village (Fig. 4) in the extreme southwest of that section is isolated from the remainder of the unincorporated community by distance, by its proximity to the more populous centers of Monrovia and Arcadia, and by its newness. Furthermore, no east-west road as yet connects this village directly with the remainder of the unincorporated area. This peripheral village receives its water from a public utility company (Fig. 7), hence is not bound with the center of the unincorporated section even by a common source of water. Although in Duarte and dependent upon Monrovia for mail delivery and all utilities except water, this village is described by its promoters as in "East Arcadia." This description, which conveys the impression of greater proximity to Los Angeles than would "West Duarte" or "South Monrovia," aptly expresses the centrifugal tendency of the southwest corner of the Duarte rancho.

So strong is the centrifugal tendency of the extreme southeast part of the rancho where the Union Pipe Company's plant and the Santa Fe Dam are the only occupancy features that this stony section is popularly believed to be in Baldwin Park rather than in Duarte. This outlying section has long been separated from the core of the rancho by the arroyos of the San Gabriel River and by the absence of roads through those arroyos, but its isolation is intensified by the Santa Fe Dam and the retarding basin it creates.

Only in the north-central and northeast of the rancho has the prevailing centrifugal tendency of peripheral sections not been apparent. In the north-central district, the mountains act as a barrier to deflect interest toward the lower sections of the piedmont. In the northeast, the mountains to the north, the San Gabriel River to the east, and the wide expanse of riverwash east of the river bed (Fig. 3) have formed barriers which have accentuated the tendency for that section to be centripetal rather than centrifugal in its community relationships. Unless Azusa becomes a powerful magnet to draw attention eastward, this centripetal tendency is likely to persist.

Relations with Neighboring Towns

In the Spanish and Mexican periods, the Duarte area was tributary to the mission village of San Gabriel and to the pueblo of Los Angeles. In the early American period, the Texas settlement of El Monte became a focal point for Duarte's pioneer settlers. El Monte was less isolated than "the Duarte," for it lay along the route of caravans and stages which followed the westward extension of the Santa Fe Trail. However, the post office in San Gabriel and the general stores in Los Angeles persistently drew interests farther westward. From the founding of Monrovia in 1886, that town has performed many services for which residents of the Duarte rancho had formerly depended upon Los Angeles. Monrovia has subsequently made banks, dry goods stores, and professional offices unnecessary in Duarte. As automobiles multiplied and roads were improved, Monrovia churches absorbed Duarte congregations. When school bus service developed, the Duarte elementary school district became part of the Monrovia union high school district which has subsequently become the Monrovia-Arcadia-Duarte high school district. Thus many of the educational interests of the Duarte community were merged with those of neighboring towns. The position of Monrovia's recreational park on Shamrock Avenue (Plate III) is affecting the selection of sites for similar parks in the unincorporated Duarte community, inasmuch as parks should not be so near as to duplicate functions. Certain interests in Monrovia advocate the annexation of the southwest part of Duarte, primarily to add to the city's assessed valuation and bring its vital well site on Peck Road within its limits. This proposed thrust seems unlikely to occur, however, because Monrovia would be unable to

supply water to a greatly increased area. Furthermore, Duarte, which is increasingly conscious of itself as a community, for most of its area has ample water without joining a city to secure it.

Arcadia, a rapidly growing (Table 1) and attractive suburban city, borders the southwest section of the Duarte rancho. Its proximity (Plate II) and its inclusion in the Monrovia-Arcadia-Duarte high school district give it many ties with Duarte. It seems unlikely, however, that Arcadia's commercial functions, now localized in two centers (Plate II), will leap eastward into Duarte, but there is a sentiment in Arcadia in favor of annexing Mayflower Village which borders its southeast boundary.

Azusa has provided limited educational, professional, and commercial services for Duarte, although even the northeast section of the rancho has been conspicuously tributary to the larger town of Monrovia. It seems probable that in the future, however, the relations between Duarte and Azusa will be closer. Accelerated industrialization--the most revolutionary of the war's contributions to the Los Angeles metropolitan district--has affected Azusa particularly. The town has expanded industrially until much of its western riverwash section, as well as the adjoining unincorporated portion of the Rancho Azusa de Dalton, is now characterized by manufactural occupance (Plate II). With ample nonagricultural land for industrial sites and with the momentum of established plants, Azusa is growing into the major industrial hub of the east portion of the Los Angeles metropolitan area. It seems probable that Duarte will be the residential center for some of Azusa's industrial workers, particularly when more highways cross the San Gabriel River. It seems probable also that some industries attracted toward Azusa by the availability of land, water, and electric power may, because of similar inducements, acquire Duarte riverwash land. The proposed change in the zoning of this area from V-3 or unlimited (Fig. 18) to M-1 or light manufacturing may beckon certain industries. As this riverwash is unsuited to crops and is poor land for residences surrounded by gardens, the light manufacturing which M-1 zoning would allow might be an efficient use of this rocky terrain.

The Duarte Rancho and Metropolitan Los Angeles

The relations between the Duarte rancho and neighboring towns are obviously part of its relations with the entire plexus

of metropolitan Los Angeles (Fig. 1). The increasing population and areal expansion of the metropolis seem largely responsible for the transitional aspect of the rancho caused by urban functional forms encroaching upon crop land. The process of decentralization now in progress throughout the metropolitan district is reflected in such transitional occupance. Because the process is not orderly and co-ordinated, portions of the changing landscape are cluttered and confused. The rancho's future occupance will respond increasingly to conditions which affect the entire metropolitan area. Thus if that area is provided with improved and extended mass transportation,¹ the rancho's trend toward urban forms of land use will be promptly accentuated and accelerated. If an influx of indigents adds to the current high cost of public relief, and if the expenses of local government continue to mount, the present high taxes on land and improvements² will rise higher, further discouraging the retention of crops and hastening the rancho's shift to urban forms of land use.

Although some airplane plants which operated during the war have closed and others operate at partial capacity, new factories are being established in the Los Angeles Lowland as part of the westward drift of industry. The starting of new factories and the enlargement of old ones³ testify to faith in the present advantages and future possibilities of the region, but manufacturing is magnifying the immediate problems of employment, housing, lagging utilities, insufficient schools, inadequate public transportation, traffic congestion, and smog. Smog, first a nuisance in the war years, still blots out the sun on many days as the prevailing

¹Plans, as yet little publicized, are being drafted for the creation of a rapid transit district to provide a co-ordinated system of rail transportation for the thickly populated core of the metropolitan district. These plans will require approval by voters of the proposed transportation district before becoming effective.

²The unincorporated portion of the Duarte rancho which is in the Duarte elementary school district paid a tax of \$4.4507 per \$100 of assessed valuation in 1947. The area outside Monrovia but in the Monrovia elementary school district paid a rate of \$4.8847. The Monrovia section of the rancho paid \$6.4684. In all sections the general county tax was \$1.8841 of the rate paid. Of the general county tax, 59 per cent was allocated to various forms of public relief. Because of increased assessed valuations, taxes for 1947 in the unincorporated section of the Duarte rancho were approximately twice those of 1946.

³In the first four months of 1947, there were 71 new factories reported in the Los Angeles area and 128 plant extensions, representing an investment of \$29,407,500.

southwest wind blows it into downtown Los Angeles and over the San Gabriel Piedmont. Like the Duarte area, many sections which do not create smog suffer from it, yet have been powerless to combat it. The prospective Los Angeles County Air Pollution Control District, which is being created to attack the smog problem, exemplifies the type of district which will become essential in attacking common problems at their source. Restoring the purity of the air will be necessary if the Los Angeles area is to maintain residential districts of high quality and remain a playground.¹ Keeping the region a desirable residential one and a tourist haven, while encouraging the establishment of industries incompatible with recreational and high-quality residential occupancy, challenge the entire metropolitan district. It seems doubtful that both of these opposing objectives can be completely attained. In the meantime, as progressive urbanization takes more fertile land out of crop production, the entire metropolitan district is reaching farther for its basic food requirements.

The Persistent Significance of Water

From Indian days when a spring conditioned the location of the Indian village of Asuksa to the present, the availability of water has conditioned the sequent occupancy of the entire Los Angeles Lowland. Although there is little likelihood that the total amount of water used on the Rancho Azusa de Duarte and elsewhere in the region will decrease, there are evidences that its use for irrigation will continue the present decline. Three dams in the San Gabriel Canyon control the flow of the San Gabriel River and modify the range between its maximum and minimum flow, making more water available in the thirsty season. The Duarte Mutual Water Company, successor to the consolidated Duarte Mutual Irrigation and Canal Company and the Beardslee Water Ditch Company, has rights to much more water from the San Gabriel than it currently uses. It will not sell or resign those rights, however, because in a dry cycle like that of the sixties or the nineties, or in some other emergency, it may need all the water to which it has established rights. As the demand for irrigation water declines, in years of abundant rainfall more river water will be

¹According to Don Thomas, managing director of the All-Year Club of Southern California, tourists now surpass motion pictures, aircraft, and petroleum as a source of revenue in southern California.

turned to beneficial use by spreading it over fanglomerate near the river. The water will then filter into the underground basins (Fig. 7) from which Duarte users or others in the lower valley will pump it. Because canyon water is cheaper and softer than pumped water, purification plants are likely to arise to make it suitable for domestic uses. The Compromise Agreement of 1889, which the court approved and subsequent court decisions have upheld, defined the rights to surface water from the San Gabriel Canyon. If powerful pumping plants are constructed by new water consumers, the courts will be called upon for further clarification and definition of the rights to water from the basins underlying Duarte. In a dry subtropical piedmont of uncertain rainfall such as that in which the Rancho Azusa de Duarte lies, the availability of water ultimately transcends all natural factors in limiting and directing the sequence of occupance.

APPENDIX

NOTES ON ILLUSTRATIONS

Plate I. The Los Angeles Lowland and Adjacent Highlands

Drawn from U. S. Geological Survey, Southern California, Sheet No. 1. Scale: 1:250,000.

Plate II. Occupance of the Ranchos Santa Anita, Azusa de Duarte, and Azusa de Dalton

The base map used was traced from U. S. Geological Survey, Altadena, Sierra Madre, Azusa, and Glendora Quadrangles. Scale 1:24,000. Occupance data from field observations.

Plate III. Occupance of the Rancho Azusa de Duarte

The base map was a tracing from tract maps of the Rancho Azusa de Duarte secured from the office of the Los Angeles County Surveyor. Scale 1:7,200. Occupance data from field investigations.

Plate IV. Sequent Occupance of Highway Frontage through the Duarte Rancho

The base map was secured from the Los Angeles County Regional Planning Commission. Scale 1:3,600. Occupance data for 1939 were obtained from field maps made by representatives of the Planning Commission in preparation for drafting zoning ordinances. These field maps were graciously made available for use in this study. The traverse map for 1947 was compiled from investigations made by the author in March, 1947.

Figure 1. Los Angeles Metropolitan District

Adapted from map in U. S. Bureau of the Census, Sixteenth Census: 1940. Population, Vol. I, p. 147.

Figure 2. The Rancho Santa Anita, North Part of Rancho San Francisquito, and West Part of the Rancho Azusa de Duarte

Aerial photograph by Spence Air Photos, January, 1941, and reproduced by permission. The San Gabriel Mountains and the Mojave Desert are in the background. The Santa Anita race track may be seen in the left-center of the picture. Much of the crop land shown is now covered with residences. Attention is called to the boundary between the Ranchos Santa Anita and Azusa de Duarte visible in the right-center of the photograph.

Figure 3. The Rancho Azusa de Duarte and Its Surroundings

Aerial photograph by Spence Air Photos, January, 1941, and reproduced by permission. Like Figure 2, this picture was taken after a storm which brought snow to the mountains.

The forking of the San Gabriel River into the Rio Hondo on the west and the San Gabriel River on the right is shown. The dark belt through the center of the rancho is composed of orange groves.

Figure 4. The Rancho Azusa de Duarte--Boundaries, Topography, and Culture

This map is derived from a composite of the U. S. Geological Survey, Sierra Madre and Azusa Quadrangles. Scale 1:24,000. Culture is corrected to June, 1947.

Figure 5. Rainfall and Temperatures, Azusa, California

This graph is based on data in U. S. Weather Bureau, Climatic Summary of the United States, Section 18 (Washington, 1932), and on unpublished statistics supplied by the office of the Weather Bureau, Pomona, California.

Figure 6. Soils of the Rancho Azusa de Duarte

Soils were identified with the aid of E. C. Eckmann and C. J. Zinn, Soil Survey of the Pasadena Area, California, U. S. Bureau of Soils (Washington, 1917). They are classified according to Walter W. Weir and R. Earl Storie, "A Rating of California Soils," Bulletin 599, Agricultural Experiment Station, University of California (Berkeley, 1938).

Figure 7. Surface and Ground Waters of the Rancho Azusa de Duarte

The service areas of water companies are mapped from personal knowledge and from reports of the engineering firm of Lippincott and Rowe made for the Duarte Mutual Irrigation and Canal Company and for the Beardslee Water Ditch Company. Data about underground basins were derived from those reports and from Harold Conkling, "San Gabriel Investigation," Bulletin No. 5, State of California Department of Public Works, Division of Water Rights (Sacramento, 1927).

Figure 8. Territory and Villages of the Gabrielino Indians

This map is reproduced by permission of Professor A. L. Kroeber from his "Handbook of the Indians of California," Smithsonian Institution, Bureau of American Ethnology, Bulletin 70 (Washington, 1925).

Figure 9. Mission Pastures and Principal Ranchos

The source of this map is Claude B. Butchison, Editor, California Agriculture (Berkeley and Los Angeles, 1946), p. 8. The map is reproduced by permission of the University of California Press.

Figure 10. The First Map of the Rancho Azusa de Duarte

This copy of the original diseño, a part of the Duarte expediente, was made available through the assistance of the Huntington Library and Mr. Leslie Garman. Though its edges are charred, this expediente, now in the National Archives in Washington, is one of the early California documents which survived the great San Francisco fire of 1906.

Figure 11. The Duarte Ranch House

This photograph of the Duarte adobe was made in about 1890. It was made available for use in this study through the kindness of Miss Lide Bacon who lived for many years in this historic house. The house was razed in 1913 to make way for a more modern structure.

Figure 12. Plat of the Azusa Rancho Confirmed to Duarte

This plat was made in 1858 by Henry Hancock, the man reputed to have brought the first surveying instruments to the Los Angeles area. His survey established definite boundaries for the Duarte rancho. This map is a reproduction from a photostat obtained from the General Land Office in Glendale, California.

Figure 13. The Rancho Azusa de Duarte, 1860

Data were copied from a faded manuscript map made by Max Strobel in 1860. This map is in the Solano-Reeves collection of the Huntington Library, San Marino, California, and was kindly made available for use in this study by that library.

Figure 14. Map of the Subdivision of the Rancho Azusa de Duarte, 1872

This map, made by Frank Lecouvreur in 1872, is a copy of the original in the office of the Los Angeles County Surveyor.

Figure 15. Occupance of the Rancho Azusa de Duarte, 1897

The base map is a modification of the U. S. Geological Survey, Pomona Quadrangle, edition of 1904. Data were derived from that map and from interviews with Duarte pioneers, especially with the late Mr. and Mrs. E. B. Norman.

Figure 16. The Rancho Azusa de Duarte, 1929

This photograph is a mosaic of overlapping verticals flown in 1929.

Figure 17. Total United States Citrus Production by Major Varieties, 1926-1927 to 1945-1946

This graph is from Annual Report, California Fruit Growers Exchange, 1946.

Figure 18. Zoning Plans for the Rancho Azusa de Duarte

The zoning plan for Monrovia is taken from a map provided by the City Clerk of that city. The plan for the unincorporated section of the rancho was obtained from the office of the Los Angeles County Regional Planning Commission in Los Angeles.

BIBLIOGRAPHY

- Baker, C. C. "Don Enrique Dalton of the Azusa," Annual Publications, Historical Society of Southern California, X, Part III (1917), 17-35.
- Bancroft, Hubert Howe. The Works of Hubert Howe Bancroft, XVIII-XXIV, History of California. San Francisco: The History Company, 1886.
- Bartlett, W. C. "Tropical Fruits of California," Overland Monthly, I (1868), 263-268.
- Berger, John A. The Franciscan Missions of California. New York: G. P. Putnam's Sons, 1941.
- Blain, Arthur T. "The Beardslee Water Ditch Company, My Personal Recollections of Events Leading up to, and the Formation of the Company." MS, Duarte Mutual Water Company, Duarte, California.
- Bogart, Ernest L. "The Water Problem of Southern California," Illinois Studies in the Social Sciences, XIX, No. 4. Urbana: University of Illinois, 1934.
- Bryant, Edwin. What I Saw in California, Being the Journal of a Tour in the Years 1846, 1847. Santa Ana: The Fine Arts Press, 1936.
- Butterfield, H. M. "History of Deciduous Fruits in California," reprinted from The Blue Anchor, Vols. XIV-XV (August, 1937, to April, 1938), Sacramento.
- California Citrograph. Vols. XX-XXXII (1937-1947).
- California Fruit Growers Exchange. Annual Reports. Los Angeles: 1935-1948.
- Carew, Harold D. History of Pasadena and the San Gabriel Valley. Springfield, Illinois: S. J. Clarke Publishing Company, 1930.
- Caughey, John Walton. California. New York: Prentice Hall, Inc., 1940.
- Chandler, W. H., et. al. "Chilling Requirements for Opening of Buds on Deciduous Orchard Trees and Some Other Plants in California," Bulletin 611. Berkeley: University of California, Agricultural Experiment Station, 1937.
- Cleland, Robert Glass. California in Our Time, 1900-1940. New York: Alfred A. Knopf, 1947.
- _____. The Cattle on a Thousand Hills. San Marino, California: The Huntington Library, 1941.

- _____. From Wilderness to Empire: A History of California, 1542-1900. New York: Alfred A Knopf, 1944.
- _____. History of California: The American Period. New York: The Macmillan Company, 1922.
- _____. Los Angeles, the Transition Decades, 1850-1870. San Marino, California: The Huntington Library, 1937.
- _____. "Transportation in California before the Railroads, with Especial Reference to Los Angeles," Annual Publications, Historical Society of Southern California, XI, Part I (1918), 60-67.
- Colby, Charles C. "Centrifugal and Centripetal Forces in Urban Geography," Annals of the Association of American Geographers, XXIII (March, 1933), 1-20.
- Conkling, Harold. "San Gabriel Investigation," Bulletin No. 5. Sacramento: State of California Department of Public Works, Division of Water Rights, 1927.
- Cooney, Percival J. "Southern California in Civil War Days," Annual Publications, Historical Society of Southern California, XIII, Part I (1924), 54-68.
- Cronise, Titus F. The Natural Wealth of California. Berkeley: H. H. Bancroft & Company, 1868.
- Dakin, Susanna Bryant. A Scotch Paisano. Berkeley: University of California Press, 1939.
- Dana, Richard Henry. Two Years before the Mast. New York: Harper & Sons, 1841.
- Davis, William Heath. Seventy-Five Years in California. San Francisco: John Howell, 1929.
- DeVoto, Bernard. The Year of Decision: 1846. Boston: Little, Brown and Company, 1943.
- Downey, John G. "More about Orange Culture," Overland Monthly, XII (1874), 560-562.
- Duarte-Monrovia Fruit Exchange. "Annual Statements," 1935-1946. Office of the Duarte-Monrovia Fruit Exchange, Duarte, California.
- _____. "Letter File." Huntington Library Manuscripts, The Huntington Library, San Marino, California.
- _____. "Minutes of Directors' Meetings." Huntington Library Manuscripts, The Huntington Library, San Marino, California.
- Dumke, Glenn S. The Boom of the Eighties in Southern California. San Marino, California: The Huntington Library, 1944.
- Eldredge, Zoeth Skinner, Editor. History of California. 5 vols. New York: The Century History Company, 1915.

- Ellison, Joseph. California and the Nation, 1850-1869. Berkeley: Publications in History, University of California Press, 1927.
- Engelhardt, Zephyrin (Charles Anthony). San Gabriel Mission and the Beginnings of Los Angeles. Chicago: Franciscan Press, 1927.
- _____. The Missions and Missionaries of California, Vols. II and III. San Francisco: James H. Barry Company, 1913.
- Evans, Taliesin. "Orange Culture in California," Overland Monthly, XII (1874), 235-244.
- Fawcett, Howard S. Citrus Diseases and Their Control. New York: McGraw-Hill Book Company, Inc., 1936.
- Fenneman, Nevan M. Physiography of Western United States. New York: McGraw-Hill Book Company, Inc., 1931.
- Fogelberg, Nephtune, and McKay, A. W. The Citrus Industry and the California Fruit Growers Exchange System. United States Farm Credit Administration. Washington: Government Printing Office, 1940.
- Graves, Jackson A. My Seventy Years in California. Los Angeles: Times-Mirror Press, 1927.
- Guinn, J. M. "Exceptional Years: A History of California Floods and Droughts," Annual Publications, Historical Society of Southern California, I, Part V (1890), 33-39.
- _____. "From Cattle Ranch to Orange Grove," Annual Publications, Historical Society of Southern California, VIII (1909-1911), 145-157.
- _____. A History of California and an Extended History of Its Southern Coast Counties. Vols. I and II. Los Angeles: Historic Record Company, 1907.
- _____. "The Passing of the Cattle Barons of California," Annual Publications, Historical Society of Southern California, VIII (1909-1911), 51-60.
- _____. "Some Early California Industries that Failed," Annual Publications, Historical Society of Southern California, VII, Part I (1906), 5-12.
- Hall, William Hammond. Irrigation in California, Part 2. Sacramento: California State Printing Office, 1888.
- Halleck, Henry W. "Report on the Laws and Regulations Relative to Grants and Sales of Public Lands in California," House Ex. Doc. No. 17, 31st Congress, First Session.
- Hayes, Benjamin. Pioneer Notes from the Diaries of Judge Benjamin Hayes, 1849-1875. Los Angeles: McBride Printing Company, 1929.
- Hittell, John S. Resources of California. San Francisco: A. Roman & Company, 1863.

- Hittell, Theodore H. History of California. San Francisco: N. J. Stone & Company, 1898.
- Hunt, Rockwell D. "Evolution of Transportation in California," The Quarterly, Historical Society of Southern California, XXVIII, No. 4 (December, 1946), 134-141.
- Hutchison, Claude B., Editor. California Agriculture. Berkeley and Los Angeles: University of California Press, 1946.
- Jones, William Carey. "Report on the Subject of Land Titles in California," Senate Doc. No. 18, 31st Congress, 2d Session, III, 18.
- Kidner, Frank L., and Neff, Philip. An Economic Survey of the Los Angeles Area. Los Angeles: The John Randolph Haynes and Dora Haynes Foundation, 1945.
- Kroeber, A. L. "Handbook of the Indians of California," Bureau of American Ethnology, Bulletin 70. Washington: Smithsonian Institution, 1925.
- Lane, D. A. "Increasing Storage by Water Spreading," American Water Works Association Journal, XXVI, No. 4 (1934), 421-429.
- Layne, J. Gregg. Annals of Los Angeles. San Francisco: California Historical Society.
- Lewis, Leslie B. "The Entrance of the Santa Fe Railroad into California," Pacific Historical Review, VIII (1939), 89-96.
- Lewis, Oscar. The Big Four: the Story of Huntington, Stanford, Hopkins, and Crocker, and of the Building of the Central Pacific. New York: Alfred A. Knopf, 1938.
- Lindley, Walter, and Widney, J. P. California of the South. New York: D. Appleton and Company, 1888.
- Lippincott & Rowe. "Report to the Beardslee Water Ditch Company on Present Conditions and Appraised Value and Recommended Improvements to Irrigation and Domestic Water Systems." MS, 1946. In office of Duarte Mutual Water Company, Duarte, California.
- _____. "Report to the Duarte Mutual Irrigation and Canal Company on Present Conditions and Appraised Value and Recommended Improvements to Irrigation and Domestic Water Systems," MS, 1945. In office of Duarte Mutual Water Company, Duarte, California.
- Los Angeles Star. Issues for 1852-1863.
- Ludwig, Salvator Louis. Los Angeles in the Sunny Seventies. Translated by Marguerite Eyer Wilber. Los Angeles: Bruce McCallister, 1929.
- MacCurdy, Rahno Mabel. The History of the California Fruit Growers Exchange. Los Angeles: G. Rice & Sons, Printers, 1925.

- McWilliams, Carey. Southern California Country: An Island on the Land. New York: Duell, Sloan & Pearce, 1946.
- Mendenhall, Walter. "Ground Waters and Irrigation Enterprises in the Foothill Belt, Southern California," United States Geological Survey, Water Supply Paper 219. Washington: Government Printing Office, 1908.
- Moore, Helen L. "California in Communication with the Rest of the Continent, with Reference chiefly to the Period before the Railroads," Annual Publications, Historical Society of Southern California, XIII, Part I (1924), 89-91.
- Netz, Joseph. "The Great Los Angeles Real Estate Boom of 1887," Annual Publications, Historical Society of Southern California, X, Part I (1915), 54-68.
- Newmark, Harris. Sixty Years in Southern California. New York: Houghton Mifflin Co., 1930.
- Newmark, Maurice H., and Newmark, Marco R. Census of the City and County of Los Angeles for the Year 1850. Los Angeles: The Times-Mirror Press, 1929.
- Nordhoff, Charles. California, a Book for Travellers and Settlers. New York: Harper & Brothers, 1875.
- Norman, Emmett B. "Reminiscences of the Early Citrus Industry." MS, 1941. Huntington Library Manuscripts, The Huntington Library, San Marino, California.
- Norman, Emmett B., and Norman, Viola Shrode. "History of Duarte." in History of Monrovia and Duarte, Charles F. Davis, Editor-in-Chief. Monrovia: Monrovia News-Post, 1938.
- Ogden, Adele. "Boston Hide Droghers along California Shores," California Historical Society Quarterly, VIII (1929), 289-305.
- Parker, Edna Monch. "The Southern Pacific Railroad and Settlement in Southern California," Pacific Historical Review, VI, No. 2 (1937), 103-119.
- Reid, Hugo. "The Indians of Los Angeles County." Reprint of letters to the Los Angeles Star, 1852. Los Angeles: privately printed, 1926.
- Robbins, George W., and Tilton, L. Deming, Editors. Los Angeles--Preface to a Master Plan. Los Angeles: Pacific Southwest Academy, 1941.
- Robinson, Alfred. Life in California before the Conquest. New York: Wiley and Putnam, 1846. San Francisco: Reprinted by Thomas C. Russell, 1925.
- Robinson, William Wilcox. "Land Grant Records that Survived a Great Fire," The Quarterly, Historical Society of Southern California, XXVI, No. 1 (1944), 38-39.
- _____. Ranchos Become Cities. Pasadena: San Pasqual Press, 1939.

Rogers, Harrison G. "The Journal of Harrison G. Rogers," in Dale, Harrison Clifford, The Ashley-Smith Explorations and the Discovery of a Central Route to the Pacific, 1822-1829. Glendale, California: The Arthur H. Clark Company, 1941.

Sanchez, Nellie Van de Grift. Spanish Arcadia. Los Angeles: Powell Publishing Company, 1929.

Shorb, J. DeBarth. "Letter Books," 1870-1890. Huntington Library Manuscripts, The Huntington Library, San Marino, California.

Southern Californian. Issues for 1854-1855.

Teague, Charles Collins. Fifty Years a Rancher. Los Angeles: Ward Ritchie Press, 1944.

United States Bureau of Soils. Eckmann, E. C., and Zinn, C. J., Soil Survey of the Pasadena Area, California. Washington: Government Printing Office, 1917.

U. S. Census. U. S. Census Office. Seventh Census of the United States: 1850. Washington: R. Armstrong, 1853.

_____. Eighth Census of the United States: 1860. Manufactures. Washington: Government Printing Office, 1865.

_____. Eighth Census of the United States: 1860. Population. Washington: Government Printing Office, 1864.

_____. Ninth Census of the United States: 1870. Vols. I, III. Washington: Government Printing Office, 1872.

_____. Tenth Census of the United States: 1880. Vols. I, III. Washington: Government Printing Office, 1883.

_____. Eleventh Census of the United States: 1890. Vol. I, Part 1. Washington: Government Printing Office, 1895.

_____. Twelfth Census of the United States: 1900. Vol. I, Part 1. Washington: Government Printing Office, 1901.

_____. Twelfth Census of the United States: 1900. Vol. VI, Part 2. Washington: Government Printing Office, 1902.

U. S. Census. U. S. Bureau of the Census. Thirteenth Census of the United States: 1910. Vols. II, VI. Washington: Government Printing Office, 1912.

_____. Fourteenth Census of the United States: 1920. Vol. III. Washington: Government Printing Office, 1922.

_____. Fifteenth Census of the United States: 1930. Population, Vol. III, Part 1. Washington: Government Printing Office, 1932.

_____. Sixteenth Census of the United States: 1940. Agriculture, Vol. I, Part 6. Washington: Government Printing Office, 1942.

_____. Sixteenth Census of the United States: 1940. Population, Vol. I. Washington: Government Printing Office, 1942.

- _____. Sixteenth Census of the United States: 1940. Population, Vol. II, Part 1. Washington: Government Printing Office, 1943.
- _____. Sixteenth Census of the United States: 1940. Population and Housing, Statistics for Census Tracts, Los Angeles-Long Beach, California. Washington: Government Printing Office, 1942.
- United States Weather Bureau. Climatic Summary of the United States. Section 18, Southern California and Owens Valley. Washington: Government Printing Office, 1932.
- Wagner, Anton. Los Angeles, Werden, Leben und Gestalt der Zweimillionstadt in Südkalifornien. Leipzig: Bibliographisches Institute AG., 1935.
- Warner, Charles Dudley. "Our Italy," Harper's New Monthly Magazine, LXXXI (November, 1890), 813-129.
- Warner, Juan José, Hayes, Benjamin, and Widney, J. P. An Historical Sketch of Los Angeles County, California. (Centennial History of Los Angeles County.) Los Angeles: Louis Lewin & Co., 1876.
- Webber, Herbert John, and Batchelor, Leon Dexter, Editors. The Citrus Industry. Berkeley and Los Angeles: University of California Press, 1943.
- Weir, Walter W., and Storie, R. Earl. "A Rating of California Soils," Bulletin 599, Agricultural Experiment Station. Berkeley: University of California, 1936.
- Wickson, Edward J. California Fruits. San Francisco: Pacific Rural Press, 1914.
- _____. Rural California. New York: The Macmillan Company, 1923.
- Wiley, John L. History of Monrovia. Pasadena: Pasadena Star-News, 1927.
- Winther, Oscar Osburn. Express and Stagecoach Days in California. Stanford University: Stanford University Press, 1936.

